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*Marching to
Different Drummers*

*Evolution of the Army's
Environmental Program*

*David Rubenson, Jerry Aroesty,
Pamela Wyn Wicinas,
Gwen Farnsworth, Kim Ramsey*

Arroyo Center

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PREFACE

This report discusses the evolution of the U.S. Army's environmental protection program. It is written in briefing form to allow senior Army leaders to grasp quickly the essential points while allowing readers with more detailed interest to glean additional background and information. It represents a significantly expanded version of briefings provided to the Army.

The report identifies strategies for improving the Army's environmental protection program while recognizing that the direct measurement of environmental performance is a difficult, if not impossible, task. The briefing draws attention to the evolution of the Army's environmental organization as it responds to unique regulatory and political requirements that define the Army's environmental obligations. The study should be of interest to those concerned with Army installation management and the problem of federal facility environmental compliance.

This is the second report in an Arroyo Center project being conducted for the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) and the Director of Environmental Programs. The first report, *Two Shades of Green: Environmental Protection and Combat Training*, R-4220-A, dealt with Army land management issues and is closely related to the content of this report. The research was conducted in the Force Development and Technology Program in RAND's Arroyo Center.

THE ARROYO CENTER

The Arroyo Center is the U.S. Army's federally funded research and development center (FFRDC) for studies and analysis operated by RAND. The Arroyo Center provides the Army with objective, independent analytic research on major policy and organizational concerns, emphasizing mid- and long-term problems. Its research is carried out in four programs: Strategy and Doctrine; Force Development and Technology; Military Logistics; and Manpower and Training.

Army Regulation 5-21 contains basic policy for the conduct of the Arroyo Center. The Army provides continuing guidance and oversight through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff and by the Assistant Secretary for Research, Development, and Acquisition. Arroyo Center work is performed under contract MDA903-91-C-0006.

The Arroyo Center is housed in RAND's Army Research Division. RAND is a private, nonprofit institution that conducts analytic research on a wide range of public policy matters affecting the nation's security and welfare.

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BACKGROUND

Recent years have seen dramatic changes in the legal and political obligations of federal facilities to obey local, state, and federal environmental laws. Immunity from regulation is vanishing and federal agencies already dedicate significant resources to correct problems that have arisen from past activities and to ensure that existing operations are in compliance with environmental law. Since 1986, when federal facilities were placed on the National Priorities List (NPL) of the nation's worst hazardous waste sites, the Army has made dramatic progress in improving its environmental performance. It has moved forward from a near-crisis situation in which obligations were ignored or neglected and environmental funds were diverted to other uses to a time when critical environmental obligations are addressed and priority projects are funded.

This progress brings the Army a new environmental challenge. Environmental performance has improved, but the costs of environmental protection have been steadily rising in the face of a declining Army budget. As with any program that has grown rapidly, efficiency must eventually become a central concern.¹ The measurement of efficiency, however, is complicated by scientific and technical uncertainty and the way in which environmental requirements are formulated. Because requirements are established by

¹We define efficiency in the text to be achievement of legal, technical, political/social, or doctrinal environmental goals at lowest cost.

outside regulatory forces, it is extremely difficult to know if growing costs are a sign of inefficiency or of growing and more complex requirements. Costs may be rising even as the Army improves the effectiveness and efficiency of its program. We also note that the Department of Defense (DoD) policy is changing. Both military and political leaders see an increased desire to take a leadership role in environmental policy. For DoD to do this, there must be a more efficient response to local and regional mandates.

Whether trying to meet regulatory or broader policy goals, the Army must address the following question:

- How can the Army build a more efficient and effective environmental program, and if requirements (whether mandated by regulation or set proactively) are increasing, how will the Army know how well it is doing?

In seeking to answer this question, we are faced with the dilemma that there are no objective, agreed upon, or consistent measures of environmental performance for the broad spectrum of issues confronting the Army. Environmental impacts are diverse, cumulative, sometimes unrelated, and often unknown or delayed. Activities that range from industrial chemicals management to wetlands conservation, endangered species management, mobile-source emission reduction, asbestos abatement, among others, are essential to limit these impacts. Given the lack of an unambiguous road map to charting progress, this report instead considers three issues, closely related to the fundamental question highlighted above:

- What type of organizational design and culture does the Army have now and how does it influence environmental operations?
- What choices and trade-offs are involved in adapting the Army's organizational design and culture to one that represents a more efficient response to environmental requirements?
- What type of organizational design and culture are needed to efficiently and effectively respond to the complex political and regulatory structure that defines environmental requirements?

Our goal as we address these issues is to identify and examine architectural strategic concepts, choices, and trade-offs, and not to pro-

duce a detailed program design. Ultimately, the design of a more efficient environmental program will evolve from an integrated strategy for installation management and a vision of the Army and its missions.

THE DIFFERENT DRUMMERS

The first chapter of this report—the major portion of the briefing—discusses the above policy questions. The political and technical requirements that environmental regulations pose for the Army are discussed, with particular emphasis on understanding the implications of the “different drummers”—the widely varying institutions, cultures, and obligations that influence the Army’s military and environmental missions. Influences (and requirements) vary because of the military/environmental dichotomy, local and regional variations, and regulatory agency responses to environmental priorities that may differ greatly from installation to installation.

The Army is organized for its military mission through a direct chain of command from the President to field activities. The organizational rationale is based on military function rather than on geographical boundaries. Efficiency, responsiveness, implementation, leadership, and unitary command are highly valued in this institutional culture.

In contrast, environmental protection is rooted in a vastly different tradition, where federalism, community participation, regulatory styles, and transparency (sometime at the expense of efficiency) are critical elements. There are diverse, even competing, centers of power and authority that impose environmental requirements from both the “top-down” (perhaps derived from direct federal mandates) and from the “bottom up” (for example, in the states and communities where Army bases are located). Also, the Army has no single environmental mission. Instead it has many different missions, each strongly integrated with political, economic, and environmental issues in the communities where bases are located.

In many ways, Congress creates an additional “drummer” in the way it reconciles environmental and military interests. Congress shares responsibility for governing the national military mission, but many of its constituent congressmen represent districts with large

Department of Defense (or Department of Energy [DoE]) facilities where environmental concerns and the environmental performances of DoD (and DoE) have emerged as political issues. In response, the Army, and particularly headquarters environmental personnel, must synthesize disparate and highly technical environmental activities into a coherent picture of the Army's environmental "mission." Headquarters needs information for purposes of planning and policy and reporting, acquiring, and allocating resources. This entails a constant flow of detailed data from individual installations, where the staff's primary purpose is to operate programs that respond to local environmental obligations. Headquarters, in turn, provides installations with policy guidance and resources to accomplish this task. Thus, one requirement for an efficient environmental response is to improve communications and coordination between headquarters and the field. This bridging function would be facilitated by an effective middle management structure.

UNIQUE TECHNICAL REQUIREMENTS

A multidisciplinary approach is clearly needed because unique and highly varied technical requirements differentiate environmental management from other aspects of installation management. Environmental problems are unusual in that they often arise as unwanted and unexpected by-products of mission or support activities. In theory, certain environmental problems do not require a separate management function and could be managed within the entity where they are created. In the absence of a tradition (or a set of skills) for internalizing environmental activities, the traditional organizational lines at an installation must be highly porous to the movement of individuals with environmental expertise. Installation environmental experts may be required to interact closely and continuously with the combat training and readiness mission, other base operation functions, and the command.

Environmental requirements add considerable technical complexity to military base operations, implying a need for access to and coordination with technical experts at various centers. In addition, familiarity with local and regional conditions is invaluable. Ideally, coordination should be flexible and effective at three different levels: within a base, vertically with the field headquarters chain of com-

mand, and horizontally across the command structure of installations that share related interests.

Organizational Responses

The next portion of the briefing analyzes the Army's response to these requirements through a model of organizational behavior that tracks institutional culture, structure, procedures, and resources, including funding and personnel. We designate Stage 1, Stage 2, and Stage 3 as the evolutionary stages of the Army's system for environmental protection and conservation. The Stage 1 system, operating during the peak of the cold war, was highly decentralized and autonomous. Little attention was given to base operations not related directly to training and readiness, and individual commanders and staffs were free to neglect environmental and conservation obligations. Headquarters was often unaware of environmental difficulties, and because there was no direct chain of command for base operations, it had limited ability to act when problems surfaced. The result was considerable variability in Army environmental performance and instances when environmental failures led to crises, sanctions, and the threat of restricted training.

The Army has largely ended this era by developing a Stage 2 system that involves a stronger role for headquarters and centralized Army institutions in evaluating priorities and funding requests submitted by installations. Procedures have been developed to ensure that environmental funding reaches intended targets and is not diverted to other base needs. Funding to correct violations of environmental law is essentially guaranteed by headquarters. Installations need not divert resources from other activities to fund high-priority programs. One consequence is that local installation commanders and environmental staff see an incentive to report environmental issues that need resolution. The cumulative effect is a substantial improvement in performance, accompanied by dramatic increases in environmental outlays.

Although the Stage 2 system was an essential step in improving the Army's program, it is not—in the long run—the best way to efficiently meet the Army's environmental challenge. Incentives to report environmental problems to headquarters and reliance on headquarters funding to solve them are not consistent with the local

nature and character of these problems. Pollution prevention and creative low-cost solutions to problems are highly dependent on effective and timely local response. The Stage 2 system provided few personnel for local environmental staffs, and funding was triggered by anticipated and actual violations rather than by cost-effective preventive actions.

On balance, the Stage 2 system does not represent a comprehensive effort to respond to legal, technical, and political realities. It encourages reactive rather than proactive activities. As noted, headquarters and installation environmental offices have different missions and respond to vastly different political influences. There is not yet an effective base operations middle management that can properly recognize these differences and promote effective coordination. Local environmental offices, facing stringent environmental requirements that are closely tied to local communities, are motivated to recast deficiencies as violations in order to maximize funding for their local operations. The lack of adequate environmental staffing, the complexity and ambiguity of environmental regulation, the perception that headquarters rather than the installations will supply resources when needed, and anxiety about criminal liability contribute to these incentives. They also limit opportunities for effective scrutiny of funding requests.

Building a Stage 3 System

In the final part of the briefing, we observe that the Army has begun to introduce initiatives that portend a comprehensive and better-balanced response. Nonetheless, it must still grapple with the fundamental challenge of the "different drummers"—that of reconciling widely varying base-specific environmental obligations with national and international missions. To respond effectively, the Army should encourage local decisionmaking and priority setting while ensuring that decisions reflect Army policy and interests.

This will require an unusual transition within the Army's program. The Stage 2 system promoted a *seemingly* stronger headquarters role because it allocated resources to bases to fund critical environmental activities. However, these activities were virtually prioritized at the local level, leaving headquarters with limited discretion. In Stage 3, more trade-offs would be made locally, but improvements in com-

munication, coordination, and ultimately control will prevent a replay of the difficulties associated with the unconstrained autonomy of Stage 1. In addition, both field and headquarters staff would share common values and a single institutional culture. Stage 3 must also involve improved understanding of environmental problems encountered by the entire Army, especially the distinctions between the needs of installations and those of headquarters. The installation environmental coordinator will be a key to success by responding to local regulators in ways that serve the Army's broad interests.

Three options for making the transition to Stage 3 are to:

1. Move toward a dual performance criterion, in which commanders and their units are judged both on military competence and on skills in environmental affairs and installation management.
2. Adopt a dual mission and incentive structure, with a sharp distinction between staff managing installations and those responsible for military missions.
3. Design a hybrid option that separates the Army's environmental program into two types of activities—those that directly affect active military bases (conservation, compliance, and prevention) and those (such as remediation and base closure cleanup) that are important to states and local communities but have only minimal impact on active installations and the continuing military mission. This is similar to option 1 but reduces the extent to which the core Army must master environmental matters unrelated to training and readiness.

Choosing among these options (and others still to be formulated) involves issues beyond environmental management. Strategies for overall installation management, the Army's tradition of unitary command, and the role of installations as "power projection platforms" must also be considered. However, a number of programmatic steps can be outlined that would improve environmental performance independent of the option selected. These are discussed in Chapter Two and are repeated here:

- Environmental staffing at all installations should be reviewed and actions taken to promote coherent, stable, and balanced environmental staffs. Environmental exceptions to the overall

downsizing of civilian base operations staffs should also be considered.

- Criteria should be developed for evaluating the performance of commanders in their base operations role. Such criteria will be useful even if there is a long-run decision to create a professional base management command.
- The Army should closely monitor and evaluate techniques for managing military bases that are now employed on an ad hoc basis. The significant variation in base operations could be exploited to calibrate techniques that work and those that do not.
- Environmental training programs should be given high priority despite declining budgets. These programs are valuable for both civilians and soldiers and are an essential element in reaching the next level in environmental management. They offer the potential for long-run cost-effectiveness.
- The Army needs to recognize that installation environmental coordinators require the skills and orientation of both a military officer and a civilian professional. The coordinator represents the Army to important political constituencies and is responsible for balancing the Army's response to the "different drummers." The position could be filled by a senior military officer with the training, orientation, and occupational specialty to ensure familiarity with environmental regulations and sensitivity to community interests. Coordinator job performance would benefit from a longer stay at a base than the customary short rotation schedule. Conversely, the office could continue to be led by a civilian, whose performance would benefit from further training about the Army's military mission and core culture. Training and sharing common values might be enhanced by tours of duty at headquarters, major commands, and other installations before assuming the coordinator post. In this manner, the coordinator could better understand the nature of the "different drummers." A similar approach might also apply to the head of compliance and natural resources at an installation.
- The Army should attempt to resolve the middle management issue for base operations. Is there a preferred configuration for a "bridging" function between installations and headquarters to link the differing perspectives?

- The role of modern quality management and improvement concepts, exemplified by the Baldrige Core Values, in facilitating Stage 3 status should be carefully investigated in terms of the concepts' influence on coordination and control.
- A pilot regional office with a dual coordinating and implementation role should be established. The management of small DoD property holdings and Base Realignment and Closure (BRAC) bases are possible activities for this office.
- The Army—in conjunction with DoD—should begin to evaluate more fundamental trade-offs for operating its bases. Other alternatives (in addition to the three options identified here) should be explored. The Army should examine how the structure of environmental regulation influences its military mission and consider creative new approaches that might lead to better environmental performance at lower costs.
- The Army (and DoD) should consider the feasibility of parcelizing active installations in order to avoid the problems that arise from the Environmental Protection Agency (EPA) policy of classifying entire installations as NPL sites. Among other advantages, this would facilitate the possible shifting of cleanup activities to a new DoD or federal agency.

Our overall findings suggest that the Army has made considerable progress in environmental protection and conservation since the decentralized Stage 1 system—characterized by local autonomy, high risk of neglect, and headquarters' indifference—was supplanted by the more responsive Stage 2 approach. But a well-designed and properly staffed system would respond to the “different drummers” with greater effectiveness and efficiency. Changes in culture, communication, coordination, control, and incentives are essential to fulfill the promise of Stage 3.

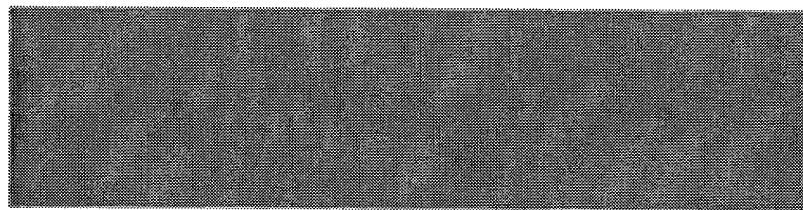
ACRONYMS

ACE	Army Corps of Engineers
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Resource Facilitation Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEH	Directorate of Engineering and Housing
DoD	Department of Defense
DoE	Department of Energy
EDF	Environmental Defense Fund
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FFCA	Federal Facilities Compliance Act
FORSCOM	Forces Command
FWS	Fish and Wildlife Service
GOCO	Government Owned Contractor Operated
HSWA	Hazardous and Solid Waste Amendments of 1984
MBTU	Millions of British Thermal Units
MoU	Memorandum of Understanding
NoV	Notice of Violation
NPL	National Priority List
OMA	Operations and Maintenance Accounts
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act

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TSCA	Toxic Substances Control Act
USACE	Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

RAND MR453-1



**Marching to Different Drummers:
Evolution of the Army's Environmental
Program**

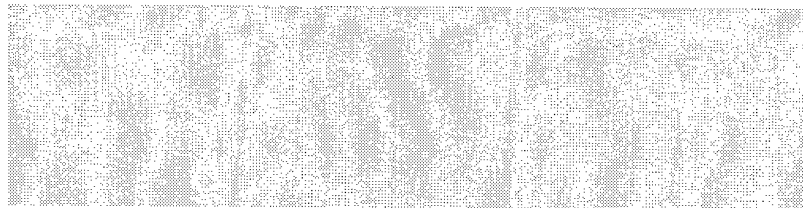


Figure 1

This report presents an organizational analysis of the U.S. Army's environmental protection program. In the report we seek to identify the organizational requirements for an efficient and effective environmental protection program, compare those requirements with the current status of the Army's program, and identify options for progressing toward greater efficiency and effectiveness. The report is

written in briefing form to allow the casual reader to grasp the essential points.

The title of the briefing is shown in Figure 1. At the simplest level, "Marching to Different Drummers" refers to the Army's dual obligation to maintain a trained military force and fulfill its environmental responsibilities. This dual obligation is the result of a complex political process that unfolded during the past decade. States and local communities have expressed growing concerns about the environmental status of federal facilities and have insisted on the right to inspect those facilities and enforce environmental laws. In response, Congress has steadily expanded the rights of environmental regulators. Although this legal process is still evolving in response to upcoming court decisions and legislative debates, there has been a steady expansion of state and local authority.

This political and legal process is forcing the Army to be responsive to two political traditions: national security, with its "top-down" linkage between mission goals and implementation, and environmental policy, with its strong roots in federalism, states rights, and community action. The first is responsive to the commander-in-chief, the second to diverse, even competing, regionally based centers of authority and power.

These two political cultures present an enormous management challenge for the U.S. Army. While the Army as a single institution has demonstrated an ability to incorporate new and unusual missions, such as disaster relief and humanitarian aid, responding to the "different drummers" has proven a difficult task. The various parts of the Army, located in diverse geographical regions, must respond to different political and regulatory concerns. Many of these concerns are not clearly defined, continue to evolve, and are subject to local judgment and negotiation. Consequently, environmental obligations and activities exhibit considerable variability from installation to installation. Thus, the "different drummers," in the broadest sense, refer to the widely varying institutions, cultures, and obligations that shape the Army's military and environmental missions.

The role of Congress complicates the situation. While sensitive to the Army's national military mission, Congress is also engaged in local politics and concerns. As a result, Congress often requires that

the Army synthesize its overall environmental efforts, which poses a significant challenge. The Army does not possess a single national environmental mission. It is a participant in a wide variety of seemingly unrelated environmental activities, ranging from wetlands conservation to pollution prevention to endangered species management to hazardous waste remediation.

We also note that the executive branch is beginning to look to DoD to provide examples of federal leadership in environmental protection. If DoD is to achieve this goal, it will need to respond to regional and local mandates with increased efficiency.

The Army's central purpose is to fulfill its military mission. But fulfillment of that mission increasingly requires an ability to anticipate and respond to new authorities with new environmental concerns. The Army must learn to march to many different drummers in order to achieve military and environmental excellence.

Outline

- ➔ • Background and environmental policy challenges
- Unique challenges posed by different drummers
- Response to the different drummers
 - Stage 1
 - Stage 2
 - Limitations of Stage 2
 - Options for achieving Stage 3

Figure 2

Figure 2 outlines the briefing. In the first section, we describe the Army's environmental challenges and identify specific policy questions involving an efficient organizational response to environmental requirements. By efficiency we mean meeting environmental requirements at minimal financial costs and constraints on the Army's military mission. Such requirements may be either legal, technical, political/social, or doctrinal.¹ Given the close scrutiny that is now given to federal facilities, it may be a political necessity to go beyond achievement of minimum legal standards and seek environmental leadership and excellence.²

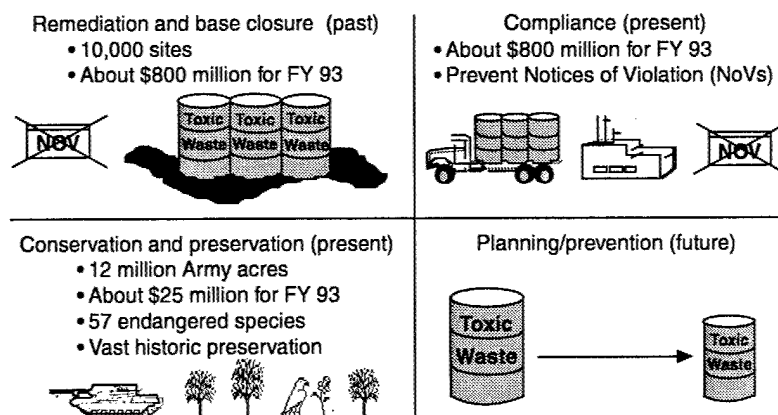
In the second section, we identify unique technical and political factors that must be addressed to achieve efficient environmental management. We then describe the Army's organizational response to these factors using a model based on three organizational stages. The first stage represents a cold war era Army organization that failed to respond to environmental changes. The second stage, developed to correct many Stage 1 defects, characterizes much of today's Army

¹Army Regulation 200-2, *Environmental Effects of Army Action*, specifies a number of goals that are not externally mandated.

²There is an increasing desire among both political and military leaders to see the Department of Defense take a leadership role, independent of the level of outside scrutiny.

program. However, the Stage 2 system does not yet represent an efficient and balanced response to the different drummers, and these limitations are identified in the third portion of the third section. Several options and alternatives for achieving a more efficient organization—which we call Stage 3—are presented in the last portion of the briefing.

The Army's Environmental Program



NOTE: Dollar amounts in this figure were obtained from the Office of the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health).

Figure 3

With its diverse activities and geographical locations, the Army must manage many environmental activities. These are traditionally described as the “four pillars” and are illustrated in Figure 3. This figure also depicts two types of *management* challenges—environmental issues dealing with correcting past problems (base closure and hazardous waste remediation) and those that result from day-to-day operations of an active military base (compliance, conservation, and prevention). The figure also shows that the top two categories, base closure/remediation and compliance, have consumed the bulk of the Army’s resources.

Compliance, conservation, and prevention tasks stem from ongoing operations. Compliance involves ensuring that air, water, and chemical waste streams are correctly monitored, permitted, and disposed of. This activity is most closely associated with command and control environmental regulation. Because compliance must be considered when dealing with conservation and preservation regu-

lations, some of the funding attributed to compliance actually supports conservation and prevention activities.

Conservation involves the management of the Army's 12 million acres of land. An earlier RAND report³ highlighted the unique features of the Army's land conservation task, the task's close connection with military training and readiness, and the need to strengthen this program even though it is subject to a less precisely defined regulatory regime.

Prevention and planning are probably the most vaguely defined elements of the Army's program. In recent years there has been a trend toward mandating source reduction in environmental law, but this is still a new aspect of environmental policy.⁴ Prevention remains a largely voluntary program aimed at reducing future costs and environmental liabilities. One goal of prevention is to reduce the volume of hazardous waste the Army generates. This may be done by changing the materials and methods the Army uses to acquire equipment and supplies and by encouraging more environmentally sensitive practices at installations.

Hazardous waste remediation and base closure differ from conservation, compliance, and prevention in that they do not necessarily intersect with ongoing military activities.⁵ Although many active bases require hazardous waste remediation, this is a consequence of past activities and may be conducted at old landfills or logistics centers removed from active bases. Base closures often require remediation but also may involve other environmental actions. Endangered species; air, water, and waste systems; and a wide variety of other issues may need to be addressed at each closing installation. However, many of these activities share with remediation the

³D. Rubenson, J. Aroesty, and C. Thompsen, *Two Shades of Green: Environmental Protection and Combat Training*, RAND, R-4220-A, 1992.

⁴California SB14, the Hazardous Waste Source Reduction and Management Review Act of 1989, is one such law designed to require hazardous waste generators to produce source reduction plans every two years.

⁵We have separated base closure from realignment issues although they are combined under Base Realignment and Closure (BRAC). This emphasizes that base closures have different management demands than realignments. We also note that closure activities may occur both before and after military units leave a base. It is this latter set of activities that can easily be separated from management of active bases.

ability to be conducted independently of the Army's military mission.

The distinction between activities integral to operating an active military base and those that can be treated separately is not usually made, but may have important organizational implications. Alternatives to a single unified management structure are worth considering, a point that we address in the last section when we discuss options for achieving a Stage 3 system.

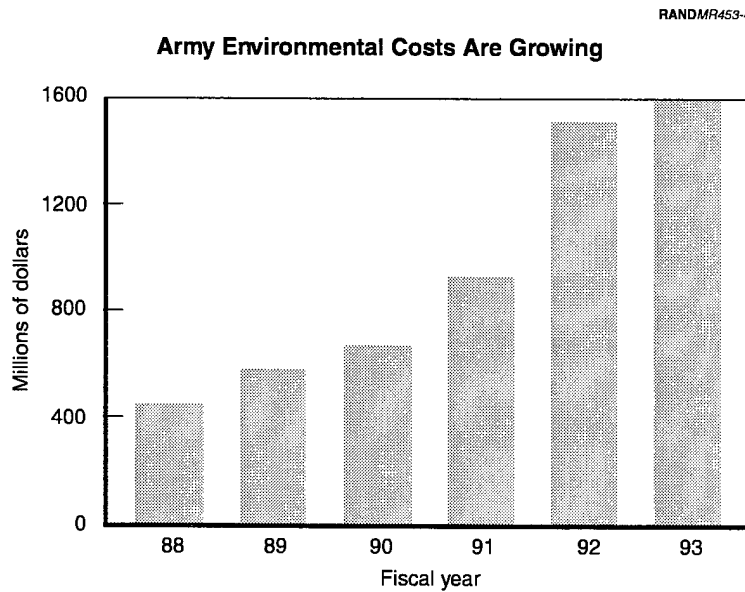
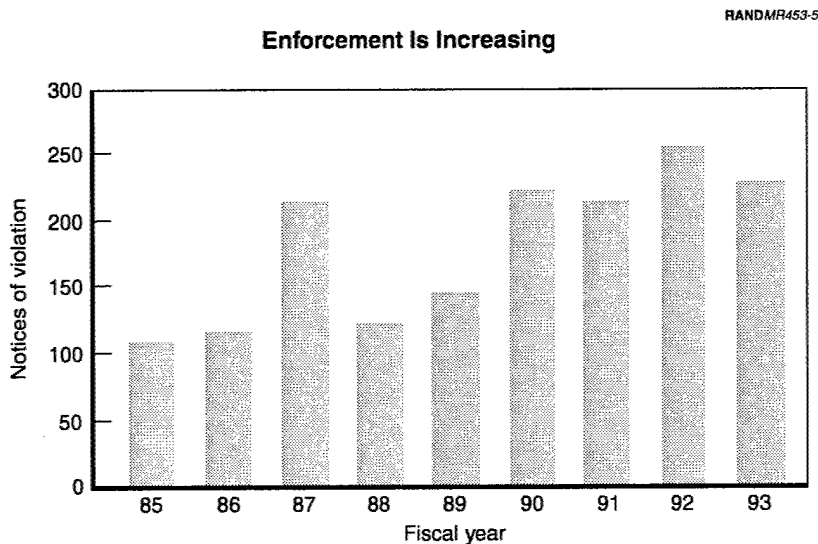


Figure 4

As with any rapidly growing program, there is a need to ensure that the Army's environmental program is efficient⁶ and developing in a manner that is consistent with long-term strategies and goals. Figure 4 portrays a steady and rapid growth in Army environmental budgets. Since the mid-1980s, when political and legislative changes began to open federal facilities to regulatory enforcement, the Army has steadily increased the resources it applies to environmental protection. This growth is even more rapid when measured as a percentage of the Army's budget.⁷ It has allowed the Army to comply with environmental law in a period of urgent and rapidly changing demands.

⁶Again, by efficient we mean achieving legal, technical, political/social, or doctrinal goals at the least cost and disturbance to the Army's military mission.

⁷*Defense Clean-up*, Vol. 4, No. 48, December 10, 1993, p. 6. Gary Vest, Principal Assistant Deputy Undersecretary for Environmental Security, states that the Department of Defense (DoD) spent \$7 billion on the environment in 1993. This would imply that significant environmental funding is buried in other accounts. If correct, and assuming Army environmental budgets are the same proportion of the



NOTE: Numbers received from the office of the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health, and the U.S. Army Environmental Center. The following is a breakdown of NoVs for each environmental law during FY 92 and 93 respectively: CAA, 38, 34; CERCLA, 1, 1; CWA, 73, 76; OTH, 0, 2; RCRA-C, 75, 62; RCRA-D, 17, 13; RCRA-I, 42, 22; SARA, 0, 1; SDWA, 15, 26; TSCA, 6, 6. Totals: FY92, 267; FY93, 243.

Figure 5

One means frequently suggested to measure environmental performance is the number of Notices of Violation of environmental law received by the Army. This information is shown in Figure 5, and in combination with Figure 4 suggests that neither the measurement of costs nor NoVs of environmental law are likely to provide a useful metric for measuring efficiency.

Figure 5 depicts the number of NoVs the Army received during the last decade, a period in which the Army's environmental performance has improved dramatically. The increasing trend is, in all

DoD environmental budget as represented by environmental accounts, the Army may be spending as much as \$2.5 billion annually on environmental protection.

likelihood, a result of increased regulatory scrutiny and the growing stringency of environmental laws. The large jump in 1987 reflected new requirements imposed by changes in hazardous waste laws three years earlier. The number of NoVs appears to be far more sensitive to external requirements than to the performance of the Army's program. NoVs can imply environmental problems of vastly different scale and consequences. They can be substantive or procedural. There is also a great deal of ambiguity as to whether a regulatory action should be classified as a Notice of Violation.

There have been extensive analyses of Army NoVs and attempts to utilize NoV information to identify persistent difficulties and future investment strategies. Despite these efforts, the ambiguity, variability, and unpredictability of the NoV process seem to have prevented effective use of such an evaluative approach on a continuing basis. Although we are not optimistic that NoVs are likely to represent an unambiguous measure of Army environmental performance, we believe that attempts to utilize these data to support decisionmaking could pay off.

RANDMR453-6

Summary of the Army's Next Environmental Challenge

- The Army's environmental program has grown dramatically
- Environmental requirements may be increasing (regulatory and proactive)
- Overall Army budgets are decreasing
- How can the Army build a more efficient program?
- How will the Army know when it is successful?

Figure 6

Despite the difficulty in measuring environmental performance, it seems clear that the Army has dramatically improved its environmental responsiveness. However, program costs have grown dramatically at the same time Army budgets are decreasing. All of these factors point to the need for increased efficiency. Efficiency in meeting regulatory demands is critical if there are to be resources available to launch proactive programs and move DoD into a role of environmental leadership.

One of the difficulties is to assess where the Army's program is going. This assessment will become a greater challenge as outside factors affect environmental management. Forthcoming legislative and legal issues may result in an increase in environmental requirements. Some have speculated that the 1992 Federal Facilities Compliance Act (FFCA), which provides states with the unambiguous authority to fine federal facilities for violation of hazardous waste laws, will result in increased regulatory scrutiny by states. DoD political leaders are also seeking ways to demonstrate a proactive environmental posture. Costs will rise to meet increasing and more complex requirements, and increased efficiency could be masked by increasing outlays. Consequently, the Army needs a road map to guide its efforts that is not dependent on cost measures of environmental effectiveness.

RANDMR453-7

Redefining the Policy Questions

- General observations
 - No widely accepted measures of environmental performance
 - The environmental regulatory structure for federal facilities has been established
- Redefined policy questions
 - What type of organization:
 - Does the Army have now?
 - Is needed for efficiency?
 - Should the Army adapt its organization?

Figure 7

The two questions posed in Figure 6 are redefined in Figure 7. In making this redefinition, we observe that (1) there are no accepted general measures of environmental performance, and (2) the environmental regulatory structure is largely in place. Although there are still ambiguities regarding the immunity of federal facilities from civil penalties, the legal and political trend is unmistakable and clear. Criminal penalties, and the legal and political obligation to comply, are leading the Army and other federal agencies to make full efforts to comply with all relevant environmental laws. There are also ongoing efforts to move DoD into a leadership role in environmental affairs.

There has at times been discussion about developing a special regulatory status for the Department of Defense. This might involve eliminating state and local variations while adopting the strictest standards across the nation. Although this might produce both savings and efficiencies, as well as improvements in environmental quality, we judge this is not realistic in the existing political climate. The starting point for our analysis is that the current regulatory structure will not be radically altered.

These observations set the stage for thinking about a high-efficiency organization to meet present and future environmental requirements. We can then compare the desired organization to the existing

one to determine how the environmental program will need to evolve. Other considerations, such as new concepts in installation management and matching organizational structures to the military mission, will also influence decisions about reorganization.

RANDMR453-8

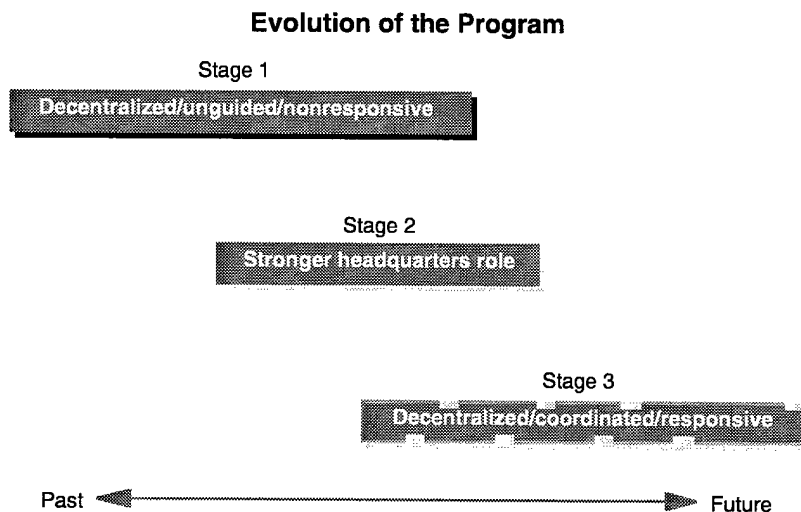
**Figure 8**

Figure 8 summarizes the argument presented in this briefing—that the Army's environmental program already has evolved through two stages and that greater efficiency and effectiveness will require evolution to a third stage. During the peak cold war period, prior to 1990, the Army had what we designate as a Stage 1 system, in which decentralized Army installations could avoid environmental obligations because of local managerial autonomy, a lack of headquarters oversight, and a relatively weak regulatory regime for federal facilities. This led to congressional, local governmental, and community intervention, with legal, financial, and image consequences. The Stage 2 system followed, with headquarters supplying procedures, guidance, and funding. In Stage 2, headquarters made funding decisions based on data and requests from local installations.

The Stage 2 system has been successful in remedying many of the problems encountered during Stage 1. Most serious environmental compliance problems are addressed and corrected. However, the Stage 2 system is a curious blend of local and centralized management. Environmental requirements, data, and assessments of ur-

gency are generated locally, while the decision to fund corrective actions is taken at headquarters. This provides an incentive for local installations to package problems as urgent issues involving violations (or potential violations) of environmental law. The result is a program that does not appear to be balanced either across the Army's diverse installations or across the four pillars shown in Figure 3. It may also act to reduce the discretionary resources available for proactive initiatives. The seemingly stronger headquarters role, which was essential for ending Stage 1 problems, is partially inconsistent with the regional, state, and local structure of environmental regulation.

A Stage 3 system would resemble Stage 1 in the degree of local decisionmaking and flexibility. However, it would ensure effective implementation while permitting higher-level policy determination, oversight, and the creation of additional initiatives. The briefing will further argue that the Army's program is currently in that portion of Figure 8 where all three stages overlap.

Whether or not the Army can, or should, move toward Stage 3 will depend on its ability to develop an organizational approach that effectively and simultaneously responds to the "different drummers" discussed in Figure 1.

RANDMR453-9

Outline

- ➔ • Background and environmental policy challenges
- Unique challenges posed by different drummers
- Response to the different drummers
 - Stage 1
 - Stage 2
 - Limitations of Stage 2
 - Options for achieving Stage 3

Figure 9

In this section of the briefing, we describe the unique requirements for efficient environmental management. They involve adapting the Army's organization and culture to be responsive to requirements generated by external institutions and political cultures with significantly different roots and traditions than the Army's.

RANDMR453-10

The Changing Political Climate of the 1980s: Community Concerns and State Authority

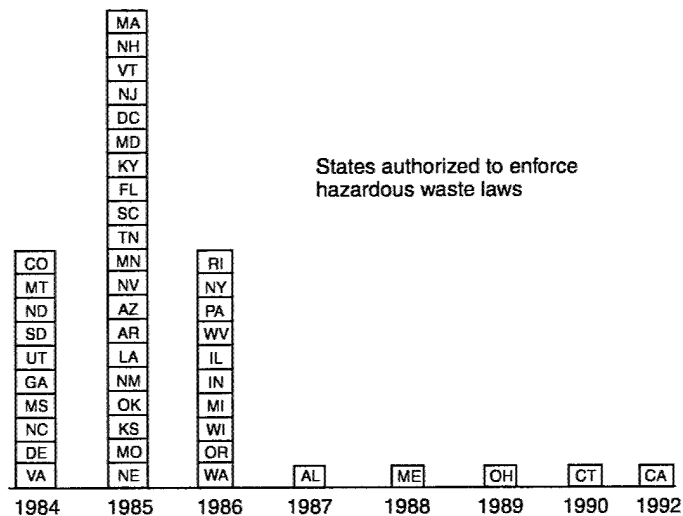


Figure 10

The 1980s was a watershed decade for the environmental regulation of federal facilities. During the 1980s, federal facilities became increasingly subject to the same environmental laws that had governed private-sector behavior for more than a decade. Two factors contributed to this change—the growth of community concerns about hazardous waste and the growth of state government authority. Figure 10 shows the number of states that gained authority to enforce federal hazardous waste programs in the mid-1980s.

To understand the significance of these factors, it is important to understand their role within the overall evolution of environmental regulation in the United States. Unlike many policy areas where initiatives are created in Washington, D.C., by seasoned experts and political leaders, environmental policy has its roots in local and grassroots concerns that appeared suddenly on the national scene in the late 1960s. Government was forced to respond and adapt to con-

cerns and issues that were outside the range of the traditional policy debate at that time.

By the early 1970s, the federal government had adopted several major environmental laws, including the Clean Air Act, Clean Water Act, National Environmental Policy Act, and the Endangered Species Act. Although these federal laws often addressed highly localized problems, a variety of factors led the federal government to take a leading role. The inability of states to manage environmental programs, the desire for a national response to rapidly emerging concerns, and the need to establish a "level playing field" among states were instrumental in motivating a strong federal role in early environmental legislation.

Although these early environmental laws were applicable to federal facilities, they had little effect on Department of Defense operations throughout the 1970s and much of the 1980s. The regulatory regime for federal facilities was relatively weak. Immunity from civil penalties, misperceptions about immunity, uncertainty about whether one federal agency, the Environmental Protection Agency (EPA), could implement enforcement actions against another federal agency (the so-called Unitary Actor theory, which implies the federal government is one entity and cannot take action against itself), and the relative physical isolation of military bases limited the pressures on DoD to respond to regulatory obligations.

Starting in the late 1970s, community concerns about hazardous waste began to grow, and in combination with several other factors dramatically changed the regulatory climate for federal facilities. It is important to note that hazardous waste was largely ignored in the first wave of federal environmental legislation of the early 1970s. As a result, local community activism and grassroots efforts continued to be the main focus of the policy process. This "bottom-up" process exploded with the discovery of hazardous waste at Love Canal, New York, in 1979. A national near-panic followed. The Superfund legislation was approved in 1980 to implement a program to clean up hazardous waste sites on private lands.

In the early 1980s, the EPA was controlled by an administration with an antiregulatory bias. It was also rocked by scandal for its reluctance to enforce the Superfund program. As a result, Congress inter-

vened with highly prescriptive and detailed hazardous waste legislation. The 1984 Hazardous and Solid Waste Amendments (HSWA) are recognized as being unusually detailed and strict. The Amendments also grant states the authority to enforce federal law and apply even stricter standards. As illustrated in Figure 10, most states, with little confidence in EPA, were eager to do so and dramatic increases occurred in state regulatory activism.

The growth of state power, combined with the intense community concerns and politicization of hazardous waste issues, had a more profound effect on federal facilities than did other environmental legislation. States were not subject to the "Unitary Actor" constraint and could attempt enforcement actions with fewer restrictions. More important, the EPA scandals transformed hazardous waste into a highly charged issue that symbolized federal nonresponsiveness to the concerns of local communities. These concerns were easily transferred to federal facilities that were achieving notoriety for poor hazardous waste management. There are long descriptions of community actions taken at Denver, Colorado; Grand Island, Nebraska; and other sites where large federal facilities had produced elevated levels of contamination.⁸ In response, Congress added federal hazardous waste sites to the nation's cleanup legislation in the 1986 Superfund Amendments and Reauthorization Act (SARA). Congress also established procedures for enabling EPA to enforce this law on federal sites and to fine other federal agencies.

The listing of federal facilities in SARA further exposed an enormous federal hazardous waste problem. Although representing only about 100 of the 1200 sites on the National Priorities List (NPL) of the nation's worst hazardous waste sites, federal facility sites have proven to be more complex, larger, and more expensive to remediate. One unexpected result is that federal sites now dominate spending on cleanup of NPL sites.

⁸For Citizens Against Contamination, a Rocky Mountain Arsenal community action group formed by Beth Gallegos, see account in Seth Shulman, *The Threat at Home: Confronting the Toxic Legacy of the U.S. Military*, Beacon Press, Boston, 1992. Accounts of the Cornhusker Army Ammunition Plant community action group, Good Neighbors Against Toxic Substances, can be found in *Sacramento Bee*, October 3, 1984; *Newsday*, February 4, 1990; and Shulman.

The awareness of hazardous waste contamination at federal facilities stimulated a political process that opened federal facilities to a far broader array of regulatory issues. The scope of the federal cleanup problem, direct congressional intervention, and the rise in state authority ended the barriers to enforcing a broad range of environmental laws on federal facilities. The 15-year lag—relative to the private sector—also triggered community, regulatory, and political attention. One manifestation of that attention was the 1989 indictment and conviction of three civilian employees at the U.S. Army's Aberdeen Proving Ground for criminal violations of the Resource Conservation and Recovery Act (RCRA).⁹ In 1992, Congress passed the Federal Facilities Compliance Act of 1992 by a 400-3 vote, granting states unambiguous power to fine federal facilities for violations of RCRA.

These events are as important symbolically as they are substantively. They indicate a shift in authority to local, state, and federal environmental regulators and a political determination to make federal facilities comply with all relevant environmental laws. One example of this scrutiny is the increased effort to enforce the Endangered Species Act on Army lands. Although federal facilities have been uniquely subject to Section 7 of this act for more than two decades, it was not until a few years ago that major enforcement actions and citizen suits were threatened. In 1992, three Army civilians at Fort Benning, Georgia, were indicted for criminal violations of the act.¹⁰ Some immunity from civil penalties still exists for federal facilities, although there seems to be a clear congressional intent to end this protection when major federal environmental laws come due for reauthorization. Federal facilities are now effectively subject to all applicable environmental laws and have become targets for regulatory action.

⁹We note that federal employees were never immune from criminal violations of environmental law even though federal agencies were immune from civil penalties.

¹⁰In the spring of 1993, the charges against one individual were dismissed. As the result of a pretrial agreement, the two remaining Army civilian employees each paid a fine of \$500 and are currently on probation.

RANDMR453-11

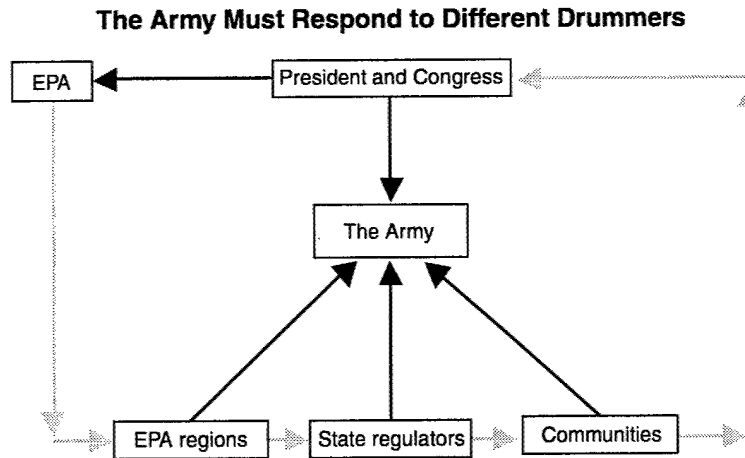


Figure 11

The regulatory demands and political issues raised in the previous figure have given rise to the “different drummers” structure illustrated in Figure 11. The drummers stem from (1) the requirement to fulfill a national military mission, (2) the need to respond to diverse state and federal environmental regulators and local communities, and (3) the critical role of Congress.

The Army has a national military mission budgeted by the Congress and directed by the President. The Army’s budget is intended to equip and train the force, operate bases, and protect the environment at those bases. There is a direct chain of command from the commander-in-chief to the various Army military command levels.

Army activities and operations are managed within its own executive structure; however, Congress—motivated by local community interests—insists that federal agencies respond to the environmental laws of the localities where they operate. One result is that regionally organized executive-branch agencies, such as the EPA, the Fish and Wildlife Service (FWS), and the Civil Works Division of the U.S. Army

Corps of Engineers (USACE) can have profound influence over Army decisionmaking and budget allocations.¹¹

The Army's ability to implement environmental law is complicated by the way in which many requirements are formulated. As mentioned in the discussion associated with Figure 10, most major federal environmental laws, such as the Clean Water Act and RCRA, grant individual states enforcement power and the authority to implement standards more stringent than the national baseline. States, and the local regulatory bodies they empower, establish and enforce many of the environmental requirements and determine when the Army is out of compliance.

Congress places an additional set of demands on federal agencies. Stimulated by individual congressional members, with districts containing key federal facilities, Congress insists that federal agencies present a national picture of their environmental activities. This often requires a synthesis across unrelated environmental activities in diverse regions and may pose a significant challenge. In reality, there are many distinct Army environmental missions, despite congressional tendencies to see a single unified mission.

The discussions in Figures 10 and 11 also highlight a broad cultural distinction between national security and environmental policy. Leadership, unity of command, clear lines of authority, and timely implementation are highly valued in the national security culture. The ability to execute a mission effectively and without diverting or distracting other organizations is highly desirable.

Environmental policy has strong roots in federalism, states rights, and community action in contrast to the traditional institutional culture of the DoD. In environmental policy, addressing broad constituencies and obtaining maximum participation are ingredients for successful policy. Public disclosure is an overriding concern. The abilities to resolve conflicting interests in public forums and to deal

¹¹The EPA is the lead regulator on the cleanup of the Army's most serious hazardous waste sites and enforces minimum federal standards on other environmental laws, even when states have been granted primacy for those laws. FWS enforces the Endangered Species Act, and the USACE is authorized to grant wetlands permits under the Clean Water Act.

with political forces at local and national levels are highly valued characteristics.

RANDMR453-12

One State's Regulatory Structure

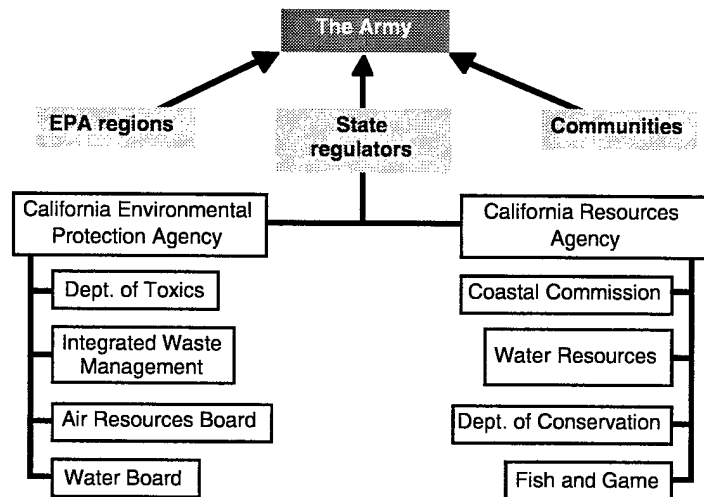


Figure 12

The challenge in meeting the requirements of the “different drummers” is magnified by the need to understand the political and organizational dynamics of each local regulatory situation. Figure 12 expands upon Figure 11 by illustrating these dynamics in California, which has arguably the strictest and most complex environmental governing system.

California’s system relies on diverse and overlapping agencies. Additionally, local water boards, district attorneys, and air pollution management districts are empowered by state government to enforce many different environmental laws. Like any large and complex bureaucracy, the priorities, both in terms of enforcement and standards, are sensitive to the local regulatory culture and human and institutional relationships.

Efficient environmental management of federal facilities requires understanding and mastery of these dynamics. Because of the scale of land holdings and numbers of employees, large federal facilities can influence regional environmental, economic, or political activi-

ties. As large institutions they may also be targeted by environmental regulators, some of whom are funded by collected fines. The FFCA could exacerbate this problem, although it is too early to measure the effects.¹² The differences among state, federal, and Army cultures are another complicating factor. Together, these issues imply that it may not be enough for the Army to be passive players in local environmental politics. Instead, efficient environmental management may require proactive efforts to overcome the legacy of past practices. This might require engagement in the political dynamics that shape environmental requirements at the community level.

¹²In the first year of the FFCA, the Army was fined \$5 million, although appeals are likely to lower this amount (communication from the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health).

RANDMR453-13

Requirements Are Set and Met at the Local Level

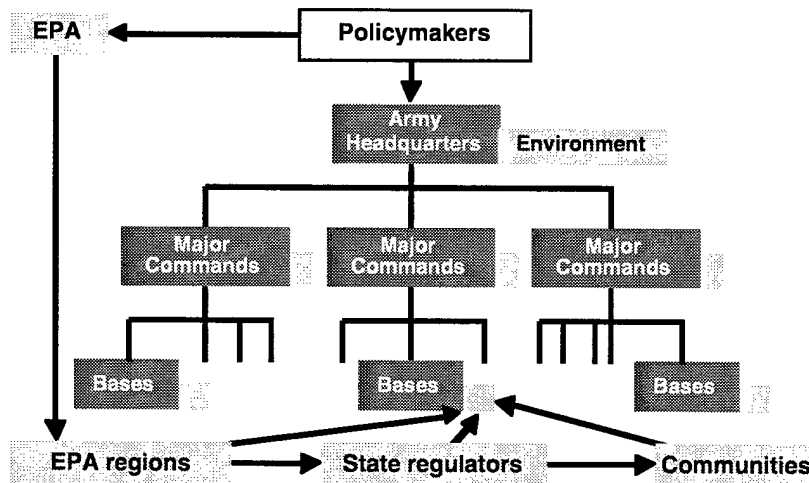


Figure 13

Just as local and regional dynamics can be important, efficient environmental management at federal facilities can be complicated by the organizational dynamics and cultures of federal agencies that operate facilities and installations. Environmental regulators generally have a geographically mediated mission focus, but federal agencies (in this case the Army) have a structure that is overwhelmingly mission oriented. See Figure 13.

The Army is organized by major military commands: Forces Command, Training and Doctrine Command, Army Reserve, Army Materiel Command, etc. The larger commands conform to military function and not necessarily to a specific geographical region.¹³ Each command is composed of individual installations, or bases, which house the military units and assets the Army manages. The supporting infrastructure for the military units (base operations)

¹³Overseas commands and the Washington military districts have a stronger geographical focus.

have traditionally been operated in a highly decentralized, if not autonomous, manner.

The chain of command has been designed to respond to the military mission, not to operate bases. An Army environmental employee at a base reports to the highest ranking military commander, not an environmental office at headquarters. The emphasis on military function as the organizing principle for the Army is illustrated by the position of the individual environmental offices shown in Figure 13. The military mission and the levels of military command provide the organizing rationale for the Army. Operating a base (with its many distinct tasks) has been traditionally viewed as a straightforward support activity with little need for higher-level coordination. As a result, there are inconsistencies and variation in the organizational structure within individual bases.

This mission-oriented configuration does not match the geographically based structure associated with environmental regulatory agencies. An individual regulator may inspect several federal installations that are far apart in a federal organization structure. Thus, one of the challenges imposed by environmental regulation is for federal agencies to capture synergies and shared experiences across their own organizational structures.

RANDMR453-14

Technical and Administrative Complexity

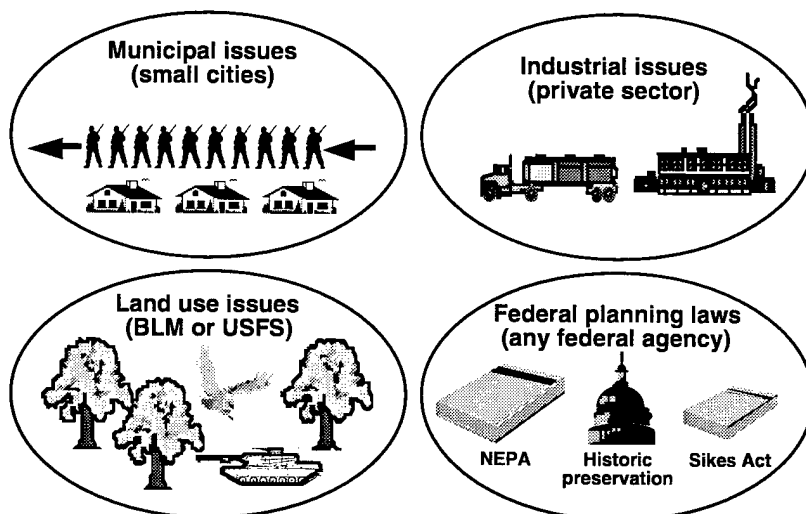


Figure 14

In addition to providing unique political and organization challenges, some issues pose unique technical and functional requirements for environmental management, as highlighted in Figure 14. Environmental management at a large training base is one of the more demanding environmental tasks in the nation. Training bases confront many problems simultaneously that other organizations cope with individually. Many bases confront all the environmental problems associated with small municipalities (complicated by the continual rotation of troops) and the land management problems of major public land owners such as the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) (complicated by frequent and heavy military maneuvers). Army bases must also adhere to planning processes prescribed for most federal agencies. These involve compliance with laws such as the National Historic Preservation Act, the National Environmental Policy Act (NEPA), and the Sikes Act. Failure to satisfy the obligations of these laws can result in citizen suits against the Army.

Although training bases confront the most diverse set of environmental problems, severe issues often arise at facilities within the Army Materiel Command. This command is composed of ammunition plants, depots, test ranges, and other types of facilities. It is mainly staffed by Army civilians, and many of the facilities are Government Owned Contractor Operated (GOCO) commanded (typically) by Army officers. Some test ranges are as diverse as training bases—large parcels of land and a variety of municipal issues. However, depots and ammunition plants tend to be industrial facilities with environmental problems that are less diverse but more acute.

Additionally, the Army manages a great many reserve posts, National Guard facilities, and other small parcels of land. These facilities do not necessarily confront major environmental management difficulties, but their large number and ubiquity pose problems in managing and tracking the Army's total environmental performance. They can easily slip through administrative cracks.¹⁴

¹⁴As an example, we found inconsistent procedures and gaps in contracting arrangements for hazardous waste pickups at some of these facilities. According to the Army Environmental Office, initial environmental audits of many of these facilities did identify numerous small problems.

RANDMR453-15

Unique Challenges for Efficient Environmental Management

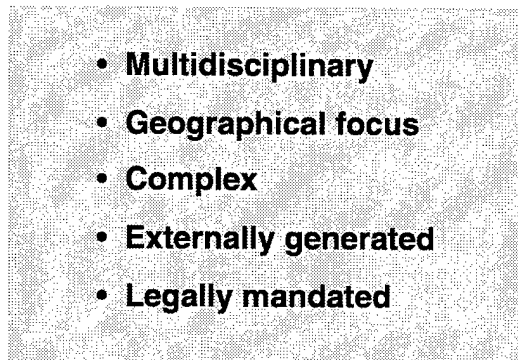
- 
- **Multidisciplinary**
 - **Geographical focus**
 - **Complex**
 - **Externally generated**
 - **Legally mandated**

Figure 15

Figure 15 summarizes the unique challenges environmental management poses to Army installations, as discussed previously. This figure also identifies an additional requirement—the need for a multidisciplinary approach to environmental management.

Environmental issues are sometimes viewed as requiring separate disciplines with distinct budgeting and personnel. But, environmental problems arise as by-products of activities required to fulfill the mission obligations of a federal agency. Thus, solving environmental problems requires not only unique technical and scientific information, but also a knowledge of the mission activities that generated the environmental problems. (We note, however, that this is not necessarily the case with remediation and base closure where environmental activities can be separated from the ongoing military mission.)

Environmental problems are more varied and technically complex than typical base operations tasks. Requirements can be set by outside regulators who decide that the Army may be out of compliance with environmental laws. In addition, these laws are generated from a regional or geographical perspective. This is the organizing principle for most environmental regulatory bodies. The resulting com-

plexity gives rise to unique political requirements. The Army must be simultaneously responsive to local dynamics, the nation's military mission, and the Congress, which closely monitors the Army's environmental performance.

In aggregate, these factors point to demanding requirements for coordination up, down, and across the Army's organization. This coordination must occur at the technical level so that expert scientific and engineering advice influences local decisions and the Army can mobilize resources for critical problems. Furthermore, the coordination must occur at a geographical level—orthogonal to the Army's organizational structure—so that shared experiences in a particular region can be exchanged and economies of scope can be realized. In many cases, it may be desirable to expand this coordination to the DoD level so that synergies with Air Force, Navy, and Marine Corps installations can be achieved. Finally, it must occur at an organizational level so that headquarters and field operations can understand the significantly different cultures that govern field and headquarters activities.

RANDMR453-16

Outline

- Background and environmental policy challenges
- Unique challenges posed by different drummers
- • Response to the different drummers
 - – Stage 1
 - Stage 2
 - Limitations of Stage 2
 - Options for achieving Stage 3

Figure 16

The requirements discussed in Figure 15 suggest the need to develop new technical skills and to coordinate and guide those skills to surmount institutional, political, and technical challenges. In this section, we evaluate the way in which the Army's organization initially responded to these challenges. We categorize this reaction as a Stage 1 system.

RANDMR453-17

A Model of Organizational Behavior

- Structure
- Culture (incentives, rewards, priorities)
- Procedures and systems
 - Base operations
 - Technical coordination
 - Funding decisions
- Resources
 - Environmental staffs
 - Environmental funds

Figure 17

The way private organizations respond to changes in external conditions is a well-researched academic discipline. Numerous models and systems have been developed to track and measure the effects of external influences on internal organizational behavior and design.¹⁵ Unfortunately, no single public agency model captures all the salient features that drive organizational behavior or is as widely accepted as models for profit-based private firms. Figure 17 represents an adaptation of some existing models of organizational behavior that will be used here to illustrate the elements facilitating or impeding efficient environmental performance by the Army. We will apply this model to the organization of the Army three times—once for the organization that existed when environmental requirements were first imposed on the Army (Stage 1), then for the changes that occurred during the Stage 2 system, and finally on the options we propose for a Stage 3 system.

Application of existing models and tools is limited by two important gaps in the academic literature. Although large corporations have

¹⁵See, for example, J. Kotter, L. Schlesinger, and V. Suthe, *Organization*, Richard D. Irwin, Inc., Homewood Ill., 1974; or E. Flamholtz, *How to Make the Transition from an Entrepreneurship to a Professionally Managed Firm*, Jossey-Bass, San Francisco, Calif., 1989.

been coping with environmental regulations for over two decades, there is a surprisingly sparse literature on how those firms have modified their organizations to achieve an effective response. There is a vast literature of case studies and stories of success, but few analytic reviews of how firms have embedded environmental expertise in their organizational design.

A second limitation is that almost all models of firm organizational behavior are based on the fundamental motivation of a profit incentive. When faced with outside forces such as environmental legislation that may have little to do with a firm's products or culture, a private firm will seek to implement such requirements efficiently when it becomes clear that they are linked to the firm's profits. Financial return is a single parameter that can link highly disparate parts of profit-making institutions.

Federal agencies are not similarly motivated. A public agency may be forced to adopt new tasks and requirements that are inconsistent with the dominant culture and mission, and that cannot be linked to its overall objectives by a profit incentive. If the imposed tasks do not contribute to the success of the agency's perceived core mission, and the agency is not given sufficient resources for their implementation, they may be inadequately implemented. As James Q. Wilson, the noted scholar of the federal system, stated, "An agency with a strong mission will give perfunctory attention, if any at all, to tasks which are not central to that mission."¹⁶ In responding to the incentives and constraints built into its culture, structure, and procedures, a government agency may be able to ignore some obligations. An agency may use its resources in a wasteful manner or make few efforts to gain efficiency.

The behavior of the Army may be analyzed in terms of the four qualitative features shown in Figure 17:¹⁷ (1) the organizational culture, which includes the incentives, rewards, and priorities individuals re-

¹⁶James Q. Wilson, *Bureaucracy*, Basic Books, Inc., New York, 1989, p. 371.

¹⁷Wilson presents numerous descriptive examples and some generalizations on how government organizations behave. Although his work does not attempt to synthesize a single, all-encompassing theory of organizational behavior, Wilson does identify each of the factors illustrated in Figure 17 (among others) as important determinants of public agency behavior. Several other of Wilson's insights that are applicable to the present analysis will be referred to in the following discussion.

spond to,¹⁸ (2) the organization's structure,¹⁹ (3) the procedures and systems that set rules for individual behavior, possibly independent of the culture,²⁰ and (4) the resources that are deployed.²¹

Applying an organizational behavior analysis to the problem of Army environmental activities is useful as a substitute for other performance measures. As discussed above, effective environmental management is extremely difficult to measure. Remediation projects can last years or decades. Outcomes from compliance activities are ambiguous. Prevention and conservation programs are difficult to monitor. Because enforcement may be inconsistent and subjective, the number of violations is not an objective measure. However, the organizational features of the Army's environmental management system can be examined and analyzed relative to their expected influence on effective and efficient program implementation. Alternative structures, procedures, and corresponding cultural aspects can be assessed in terms of their potential to produce better outcomes.

We note that our application of this model is still in a preliminary and conceptual stage. We are hopeful that further analysis and research will refine both the model and the ability to describe Army environmental activities in the light of organizational theory. We also hope the academic community will recognize the importance and uniqueness of federal organizations and turn its attention to monitoring, describing, and analyzing such organizations.

The roles of values and conflicts in policy interpretation cannot be adequately stressed as factors in organizational effectiveness, particularly when field operators and local managers are separated from headquarters by distance, training, and culture. J. J. Kennedy and

¹⁸William G. Ouchi and Alan L. Wilkins, "Organizational Culture," *Annual Review of Sociology*, Vol. 11, pp. 457-483, 1985.

¹⁹For a description of the effects of structure on the actions of a public agency, see Thomas H. Hammond, "Agenda Control, Organizational Structure, and Bureaucratic Politics," *American Journal of Political Science*, Vol. 30, No. 2, pp. 379-420.

²⁰Process and routine are considered part of an organization's "technology"; see W. Richard Scott, *Organizations*, 2nd ed., Prentice Hall, Englewood Cliffs, New Jersey.

²¹For a public agency, access to resources is determined by external decisionmakers and is influenced by politics; see Philip B. Heymann, *The Politics of Public Management*, Yale University Press, New Haven, Conn., 1987.

others have studied some of these issues in the context of forest service professionals and managers.

The Base Operations Structure in Stage 1

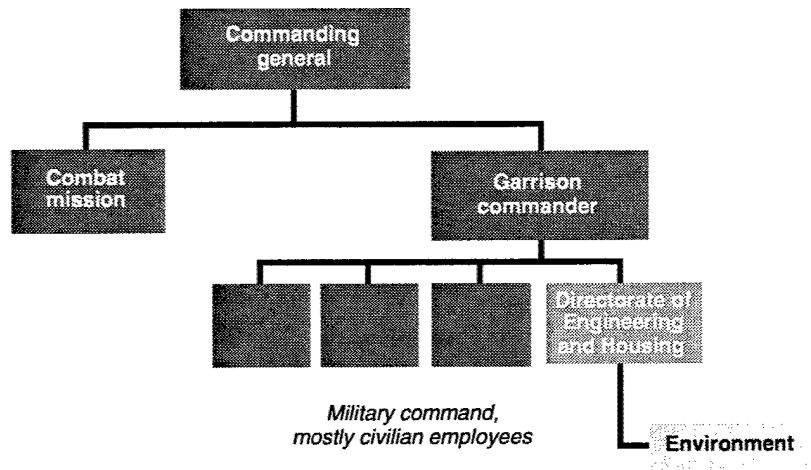


Figure 18

Figure 18 illustrates the internal organization of a training base during Stage 1, the period prior to the mid- and late 1980s when the Army had not adapted to new environmental requirements. This was the cold war period of intense concentration on realistic training and readiness. Base operations under the Stage 1 system are generally consistent with today's base operations structure, although there have been significant cultural and procedural changes.

The figure shows that the commanding general serves as both military unit commander and the commander of the installation where the unit resides. At a large training base, the commanding general will typically command a division or a corps (the combat mission). Installations may house other units, schools, or tenants, each with its own commander. The highest-ranking military officer retains overall responsibility for the base.

Traditionally, general officers are promoted on the basis of military leadership in the field rather than their performance and expertise as base managers. As a result, the installation commander's interest

and ability in managing a base depends more on personal experience than on any systematic acquisition of career skills related to that position. Base operations functions are typically delegated to a garrison commander, generally a full colonel serving his last Army tour. Garrison commanders are often well-seasoned soldiers with extensive experience within the Army system, but with little prior experience in base management. They have achieved their rank because of their skills as soldiers rather than as city managers.

Beneath the garrison commander are numerous directorates, such as the Directorate of Logistics, the Directorate of Engineering and Housing (DEH), the Directorate of Public Affairs, and others. These directorates are led by officers of similar experience and career status as the garrison commander, although stemming from different military branches. The DEH, for example, is often, but not always, a member of the Corps of Engineers.

Since there is no "chain of command" for base operations, instructions for the directorates come from higher headquarters and take the form of a long "stove pipe" from a similar functional office at headquarters.²² The term refers to the fact that each directorate is instructed in a narrow or "unidisciplinary" perspective. The "stove-pipe" also illustrates the great distance between the headquarters office and the directorate, implying that regulations and procedures can often be ignored or avoided.

Although officers direct the major base operations functions, the traditional concept of the core mission—training soldiers and maintaining combat readiness—limits the role of the soldier in base operations. As a result, base operations activities are conducted largely by civilians working under a military officer. Given the short officer rotations, it is primarily the permanent civilian employees who supply the corporate memory and technical know-how required to operate the base. In some instances, the officer may possess limited technical knowledge, experience, or interest to deal with complex technical and regulatory matters.

²²As will be discussed later, the Army has begun to change this approach, particularly in its attempts to forge a more unified approach at headquarters.

The Stage 1 environmental office was within the DEH and was staffed by civilians. A disincentive for military staffing was the lack of a specific military occupational specialty or skill identifier for an environmental office. The office was, and continues to be, typically headed by a civilian known as the installation environmental coordinator.²³

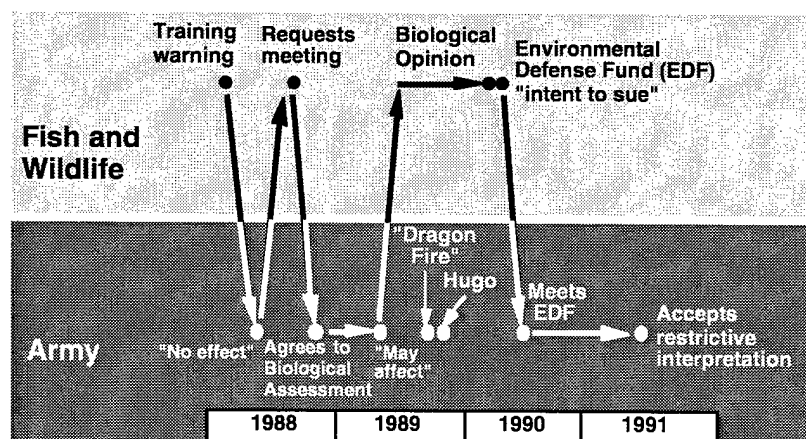
In Stage 1, the installation environmental office was an isolated office within the DEH. Army environmentalists frequently complained that the DEH diverted environmental funds to pay for other installation needs. The DEH had the discretion to set priorities and there was generally little interaction between the environmental office, other garrison directorates, or the combat mission. Environmental inspectors might enter a base and discover defects without the environmental office being aware of the event. The Stage 1 environmental office was a backwater that maintained a low profile in the management of an installation. The value that a particular commander ascribed to environmental protection was typically based on the personal chemistry between himself and the DEH, as was the relationship between the DEH and the environmental coordinator.

Because individual installations have traditionally operated with a great deal of autonomy, these observations do not, and did not, reflect inviolable rules or policy. Although Army regulations may suggest organizational structures, an installation commander retains the flexibility to organize and structure the installation in a manner that he deems most appropriate. Two examples of this flexibility occurring today are Fort Sill and Fort Benning. Fort Sill is currently experimenting with a civilian garrison commander (a retired officer with experience in base administration). At Fort Benning, because of an extraordinary situation stemming from the criminal indictments noted earlier, a military officer directed the environmental program.

²³This is still the situation today, although there is an increasing tendency to move the environmental office up to the status of directorate. Thus, the civilian environmental coordinator would obtain a position status of a full colonel.

RANDMR453-19

Fort Bragg: A Stage 1 Case Study



NOTE: This case study is discussed in detail in R-4220-A.

Figure 19

An endangered species consultation at Fort Bragg, North Carolina, provides a dramatic illustration of how the Stage 1 system was an inadequate response to the organizational requirements discussed in Figure 11.²⁴

Fort Bragg is home to a large population of red cockaded woodpeckers, a species listed under the Federal Endangered Species Act (ESA). The ESA obliges each federal agency to avoid harming listed species and to take active roles in enhancing those species' recovery. If federal activities threaten the continued existence of the species, federal agencies are obliged to seek consultation with the U.S. Fish and Wildlife Service (FWS) and develop a plan for preserving the species.

²⁴ This discussion is an example of Stage 1 behavior and does not reflect current activities at Fort Bragg. Subsequent events, in particular Bragg's efforts to organize a regional recovery plan in concert with private land holders, is indicative of what we will later describe as a Stage 3 system. The involvement of senior Army leadership in negotiations with the FWS over the status of firing ranges demonstrates a dramatic reversal of the Army's organizational behavior.

The request for consultation is motivated by a study called the Biological Assessment that must be undertaken by the action agency, in this case the Army. A "may affect" finding will lead to a study called the Biological Opinion, which is conducted by the FWS, normally in consultation with the action agency.

Figure 19 briefly reviews the history of this consultation process, during which the Army and Fort Bragg operated with a Stage 1 system. There is substantial evidence to indicate that Fort Bragg should have initiated consultation on the role of military training and timber harvesting with the FWS in the late 1970s. For example, in 1984 Army headquarters and the FWS conducted an Armywide consultation on timber harvesting. Had Fort Bragg followed the resulting Army procedures instead of largely ignoring them, many subsequent problems would have been avoided.

Fort Bragg failed to initiate consultation and in 1988 the FWS notified the Army that it must do so. It was only under direct orders from headquarters that Fort Bragg finally initiated the consultation in 1989. The Army's Biological Assessment reached a "may affect" conclusion, but Fort Bragg added that the primacy of the military mission could not be compromised.

The FWS then conducted its Biological Opinion. During this process, the Army conducted "Dragon Fire" exercises, which some biologists and the FWS claim led to extensive habitat degradation. Hurricane Hugo then destroyed the largest woodpecker habitat at the Francis Marion National Forest in South Carolina, bringing increased attention to the habitat at Bragg. Under threat of citizen suit by the Environmental Defense Fund, a citizen activist group, and after visits by FWS criminal investigators, Fort Bragg ultimately accepted a narrow interpretation of the Biological Opinion. This Opinion placed significant restrictions on Fort Bragg's combat mission. Our earlier analysis suggested that had Fort Bragg adopted a creative and innovative plan early in the process—one that took an installationwide approach to woodpecker management—both the ecology and the military mission would have been better preserved.

Fort Bragg's failure to develop an effective installationwide plan can be understood by linking the organizational behavior of the Fort to the model presented in Figure 17. The *culture* of Fort Bragg was

clearly the major stumbling block in adequately addressing the problem. There was little recognition of the Army's environmental obligations, and there was a sense that there was no great need for adapting the military mission to better accommodate ecological conditions. The value placed on military skills was the single incentive directing organizational behavior.

In addition, the *structure* of the Army did not facilitate an effective response. The several attempts by environmental personnel at higher headquarters to engage in the process were rebuffed by Bragg base operations personnel. The latter had operated under a tradition of autonomy for many years and perceived no need for headquarters interference. The only effective communication from headquarters was a direct order through the military chain of command to conduct the Biological Assessment.

Most significant, the *procedures and systems* failed. The "undisciplinary" tradition prevented the environmental office from working with the military units, and at times from even knowing of their activities. There was no multidisciplinary planning. During the consultation with the FWS, the environmental office was not able to offer significant installationwide trade-offs that might have ultimately reduced the impact on military training. The gap between functional entities was so wide that the Army conducted one of its most intensive and damaging training activities at the very time when the FWS was determining what restrictions to place on military training. In addition, many of the procedures that were in place were ignored.

Habitat conservation and preservation pose many problems, and success may depend more on planning than on funding. The environmental staff was small and faced an enormous scientific challenge in one of the nation's most complicated ecosystems. Fundamental research questions dealing with military-specific effects (e.g., smoke and noise) on the red cockaded woodpecker had to be resolved. Instead, the Army maintained a small, understaffed environmental office that had little access to the necessary resources. Internal support was minimal, and there were no procedures in Stage 1 for acquiring Army funds for the necessary planning tasks or research.

Figure 20 illustrates the flow of communications that characterized the Stage 1 structure as illustrated at Fort Bragg.

RANDMR453-20

Base Communication Structure in Stage 1

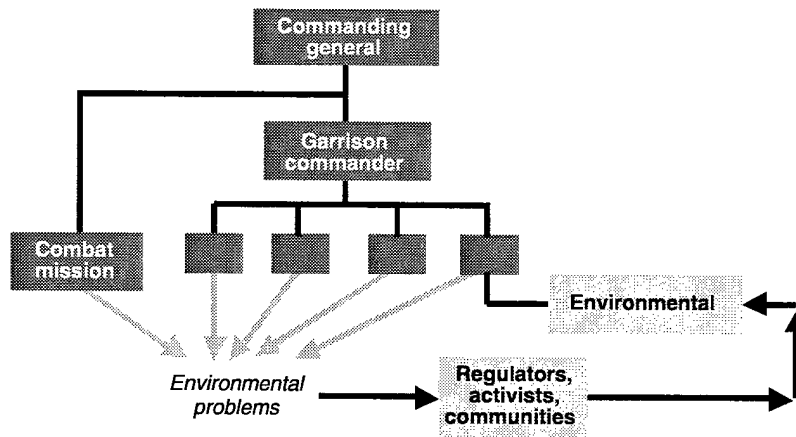


Figure 20

As shown in the figure, environmental problems were generated as incidental by-products of mission and support activities. The Fort Bragg case study pointed out numerous instances in which the environmental office had little awareness of these problems and activities. It was often the regulatory agency that provided the link between the base activities and the environmental office. Thus, the Army was unprepared to address the interaction between regulators and bases illustrated in Figure 13. Regulators inadvertently acted to bridge internal Army communication gaps.

Organizational Behavior as Related to the Environmental Program in Stage 1

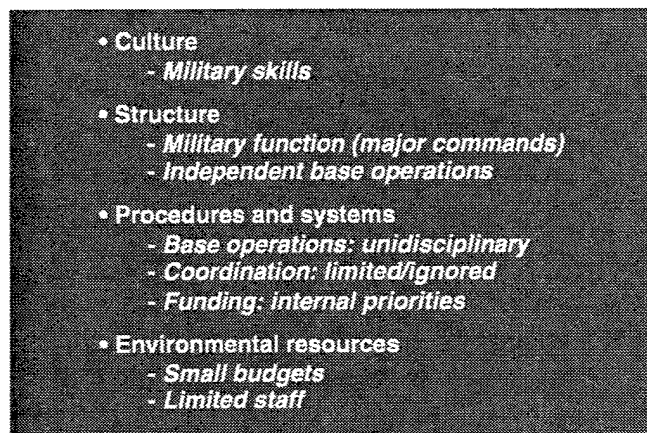


Figure 21

Figure 21 places the discussion of the preceding two figures within the context of the organizational model presented in Figure 17.

In Stage 1, the culture of the Army was established by the military mission and the skills developed to fulfill this mission. Possession of these military skills determined an officer's command rank and dictated the primary incentive structure for Army personnel. The promotion process for a base commander did not generally consider whether the candidate possessed the skills and background for managing a small city. On a broader level, the culture created an organizational isolation that did not respond to major changes in environmental policy. The Army had not recognized the growth in power and authority of state and local regulators.

The Army's structure was consistent with its culture, leading to significant autonomy for base operations with little compelling direction from headquarters. The structure did not conform to the geographical priorities of local and state officials, and was based overwhelmingly on military function.

Procedures and systems within the base operations structure were largely conducted in a "undisciplinary" mode, consistent with the "stove-piped" philosophy. Jobs and tasks were not guided by multidisciplinary procedures linking base operations with the military mission or even within diverse base operations tasks. Procedures for technical coordination between base operations and environmental issues were limited and—within a tradition of autonomy—could often be ignored.

Base environmental resources were, in effect, determined at the local level and balanced by the DEH and garrison commander against other installation needs. This local autonomy, in combination with the culture, the organizational structure, and the lack of clearly defined procedures and systems, resulted in few human or financial resources applied to environmental protection.

Unique Requirements and Stage 1

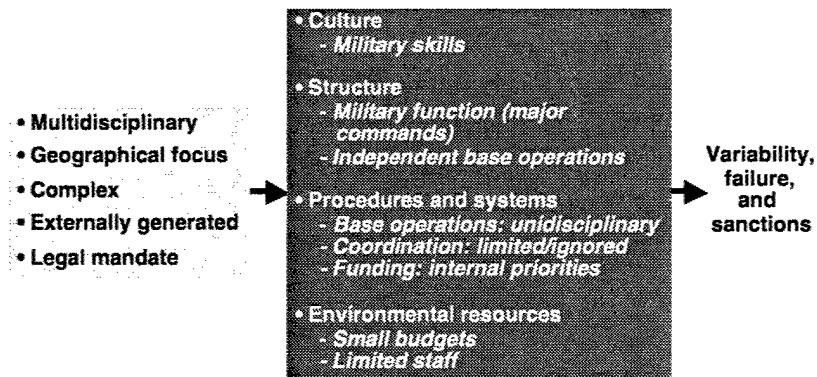


Figure 22

Environmental regulatory requirements placed unique and often conflicting demands on the Army's organizational structure in the Stage 1 system. These requirements called for a greater need for a geographical focus, a focus not consistent with the military's structure. Although the need for geographical responsiveness was not inconsistent with the autonomy of local base operation, the failure to imbed environmental concerns in the Army's culture did little to stimulate effective local response.

As discussed previously, the multidisciplinary nature of environmental problems was inconsistent with the unidisciplinary structure of base environmental management. Base environmental offices did not have the authority to cross organizational lines and were often unable to gain the attention of the command.

Operating a base was no longer a simple, incidental task that officers with general management and leadership skills could easily master. The complexity of environmental affairs challenged the entire system and demanded improved coordination among headquarters, Army technical centers, and other local installations.

Finally, the nature of bottom-up externally generated environmental requirements driven by legal mandates was not consistent with an

Army culture that was responsive primarily to the national military mission and fixed budget-cycle procedures.

The results of this process are well known. The Army's decentralized base operations structure, in concert with its culture, generally failed to effectively respond to the new requirements. The autonomous tradition of base operations did, however, produce variability in environmental performance across Army bases, including failures, successes, and instances of environmental excellence.

Outline

- Background and environmental policy challenges
- Unique challenges posed by different drummers
- Response to the different drummers
 - Stage 1
 - – Stage 2
 - Limitations of Stage 2
 - Options for achieving Stage 3

Figure 23

By the late 1980s, it was widely acknowledged that the Stage 1 system was not effective. Political pressures and criminal convictions of civilians at Aberdeen shocked the Army. By 1990, the Army was facing an array of growing restrictions on military training throughout its domestic base structure. As a result, new policies were put in place that helped move the Army toward a Stage 2 system.

RANDMR453-24

Base Communication Structure in Stage 2

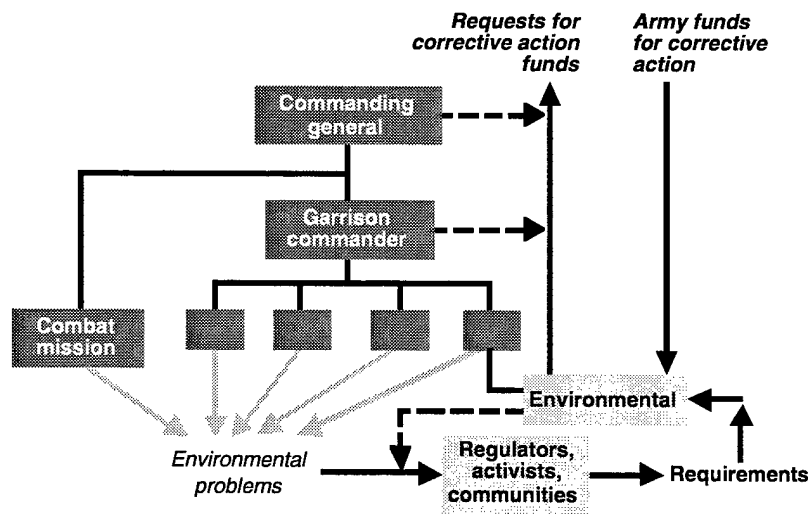


Figure 24

Figure 24 shows how environmental requirements were generated and resolved in the Stage 2 system. Unlike the Stage 1 system, the environmental office was less isolated. Environmental personnel gained a much better knowledge of basewide environmental issues, and relationships with other base functions improved dramatically. A second change was the ability of environmental offices to request funding from headquarters and for those requests to be facilitated by the command. Priority requests were fulfilled and not diverted to other installation needs.

These new flows were motivated by two developments, one based on policy and one on law. First was an Army assurance that the funding required to address violations of environmental law would be provided without penalizing an individual base. Congress established a strictly fenced account for remediation and a priority system was established for directly funding compliance issues. Environmental funding continued to flow to installation Operation and Maintenance Accounts (OMA), but the Department of the Army

guaranteed that OMA funds would be supplemented when funds were needed to correct violations of environmental law (Class I projects). When new problems were reported, supplemental funds would be added to the OMAs, as opposed to compelling bases to choose between funding environmental projects and other needs. Although funds were not strictly fenced, greater and more effective efforts were made to ensure that funding reached its target Class I "must-fund" projects. Projects that could prevent violations at a later date (Class II) and other environmental projects (Class III) were given a lower funding priority. Some activities, including certain types of hazardous waste disposal, were considered "Class III must-funds."

The second development was the criminal convictions at Aberdeen and indictments at Fort Benning, which led to cultural changes primarily driven by fear of personal responsibility. With no loss of funds, and anxiety about criminal penalties, few commanders attempted to divert environmental funds or block the movement of requests up the chain of command. The combination of funding and fear led to the creation of a direct line between headquarters and the environmental office.

We also note that an increase in the scope of headquarters' activities demonstrated a new level of seriousness. Existing Army centers of technical expertise, such as the Engineering and Housing Support Center, the Toxics and Hazardous Materials Agency, the Construction Engineering and Research Laboratory, and the Army Environmental Hygiene Agency, expanded their expertise in environmental affairs. Headquarters created an Army Environmental Policy Institute and reorganized several functions into an Army Environmental Center. All of these functions greatly facilitated headquarters' ability to gather and organize data for purposes of synthesis, policy, planning, and acquiring and allocating resources. Headquarters was improving its ability to inform the political process about the Army's environmental mission.

RANDMR453-25

The Transition from Stage 1 to Stage 2

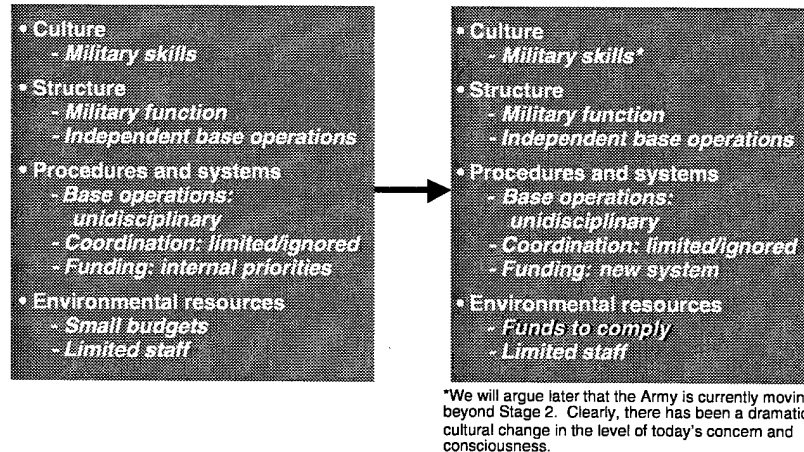


Figure 25

Stage 2 greatly improved the Army's environmental performance by bringing the Army into compliance. As illustrated in Figure 25, procedures were established to fund compliance violations and potential violations of environmental law. As noted earlier (Figure 4), Army environmental funding has increased dramatically during the past five years.

However, the application of resources alone does not represent a sufficiently comprehensive response to the technical, organizational, and political requirements highlighted in Figure 15. Despite funding increases, the structure and culture of the Army remained largely unchanged. Army officers more fully understand the need to protect the environment and perceive their vulnerability to the possibility of criminal violations, but promotion to both garrison and installation commander depends little on base-operations skills. The structure of base operations remains highly decentralized and operations are

still largely managed by “stove-piped” procedures and traditions.²⁵ Furthermore, the new procedures have done little to expand the Army’s limited environmental staffs.

Stage 2 is largely reactive and its focus on compliance and violations has diverted the Army’s program from conservation and prevention. Issues related to these “pillars” are harder to categorize as violations of environmental law.²⁶ The conservation problems at Fort Bragg occurred as the Stage 2 system was being implemented for compliance reasons. It has been extremely difficult to ensure proper attention to conservation issues even though there is a growing recognition of their importance to the military mission. Given this importance, and the potential to minimize future costs through prevention, the Stage 2 system may not properly balance attention and resources among the four pillars. This raises the question of whether the Stage 2 program was governed by a “compliance at any cost” incentive structure rather than one of balance, optimal investment, and informed decisionmaking.

²⁵Later in the text, we categorize recent Army efforts to change this tradition as part of a Stage 3 system.

²⁶Conservation issues are discussed in detail in R-4220-A. Prevention, by its very nature, implies addressing environmental problems before compliance becomes an issue. As noted in an earlier footnote, there is an emerging tendency in environmental law to require prevention activities such as waste reduction.

RANDMR453-26

Outline

- Background and environmental policy challenges
- Unique challenges posed by different drummers
- Response to the different drummers
 - Stage 1
 - Stage 2
 - – Limitations of Stage 2
 - Options for achieving Stage 3

Figure 26

We next discuss the various limitations of a Stage 2 system. The Army's environmental program has partially evolved beyond Stage 2, although many Stage 2 limitations are still present. Identifying these limitations is critical for planning a full transition to a Stage 3 system.

RANDMR453-27

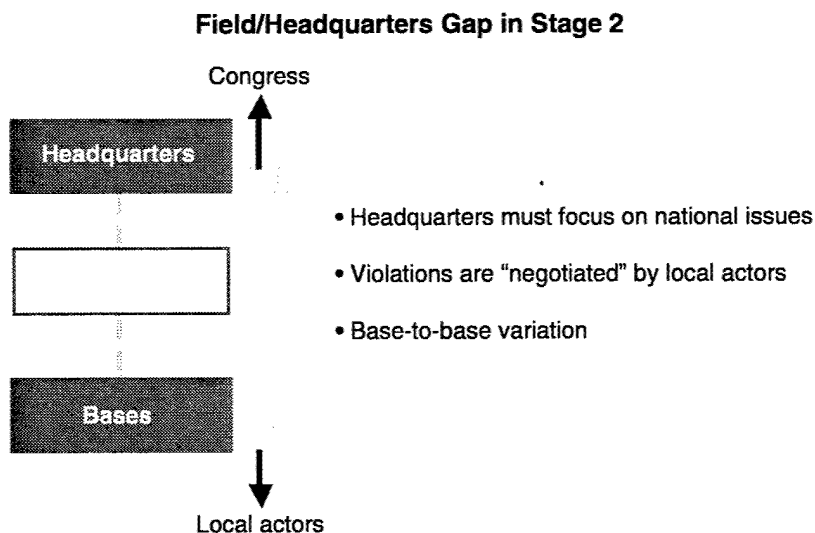


Figure 27

The Stage 2 system was highly reactive and aimed at ensuring that the worst environmental problems were addressed through adequate and timely funding. It did not emphasize a comprehensive plan for responding to the technical requirements imposed by environmental protection shown in Figure 15. Failure to plan properly weakens the ability to be proactive and to direct resources toward worthwhile conservation and prevention activities. To implement prevention and conservation, the Army must be able to limit mandatory funding requests while maintaining compliance at local levels. This, in turn, depends on the interest and ability of local Army personnel to negotiate in good faith with outside regulators while trying to limit compliance costs.

Figure 27 highlights several factors that imply that Stage 2 incentives may not support this goal. One such factor is the role of the different drummers. The environmental focus at headquarters is on national issues. Army headquarters must look "up" and synthesize a national picture of Army environmental activities for Congress and the Administration, and, increasingly, for the Army's top military com-

manders. Congress, continually aware of local communities and their interests, insists on careful monitoring of DoD's nationwide environmental performance. To develop such a national picture, headquarters must forward numerous, often unwelcome data requests to installations. The data are used to develop a coherent picture of a single national environmental mission derived from many distinct local environmental initiatives.

In contrast, installation environmental offices respond mainly to local concerns. Often, as one of the largest employers and land owners in a region or community, an installation and its environmental "mission" are closely bound with other local and regional issues, institutions, and interests. *A direct chain of command links the Army's national military mission with decentralized military activities, but no such national mission or chain of command exists for environmental activities.*

This field/headquarters' gap in perspective, along with the tradition of installation autonomy, exacerbates an inherently difficult problem of headquarters evaluating local funding requests. Environmental laws are complex and can vary by region, and enforcement is often performed by state or local officials. Typically, it is the negotiation between the base environmental coordinator and the regulator that establishes the course of action to be taken. Compliance is often ambiguously defined and can be determined by the content, tone, and appearance of good faith in local negotiations. The issuance of a Notice of Violation, and the need to report it to higher headquarters can be subjective.²⁷

The field/headquarters' gap, combined with "must-fund" procedures, create an incentive for bases to "game" funding requests to fit the funding parameters. Moreover, as noted previously, an excess of mandated requirements prevents the Army from making worthwhile investments in proactive environmental practices that could lower costs and reduce the number of violations.

²⁷During one interview we asked an environmental coordinator if the base had received any recent NoVs. He showed us a letter received that day from state regulators stamped "Notice of Violation" and discussed the pros and cons of reporting this as an NoV. Bases may also choose not to contest marginal or possibly even incorrectly determined violations with the expectation that resources will be easier to obtain with a bad report.

The obvious question suggested by Figure 27 is whether there is an effective middle management structure—one that can evaluate funding requests, identify and achieve efficiencies in environmental management, and provide a means of coordinating and bridging the gap between headquarters and the bases. In the following pages, we will examine the existing middle management: the major commands in the Army organizational structure.

RANDMR453-28

Fort Irwin Ecology and Regulation

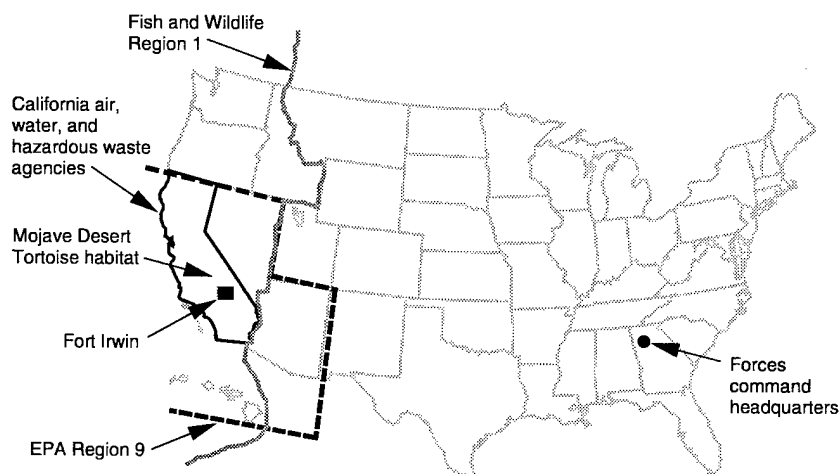


Figure 28

Although the major commands fulfill the middle management role defined in the previous figure, they are not configured or positioned for that function. As an example, Figure 28 illustrates the locations of Forces Command in Georgia and some of the complex, overlapping regulatory framework covering Fort Irwin in California.

Forces Command headquarters is geographically distant from Fort Irwin and its regulators. The State of California has the authority and capability to regulate issues related to water, air, and hazardous waste. EPA Region 9, which covers California, Hawaii, Nevada, and Arizona, regulates baseline standards for the federal government. Obligations under the Endangered Species Act are enforced by Region 1 of the United States Fish and Wildlife Service. Fort Irwin is the home of the desert tortoise, a federally listed threatened species. The habitat for this species is circumscribed by an additional set of ecological boundaries that Fort Irwin must consider in planning existing or future operations and in formulating natural resource plans.

RANDMR453-29

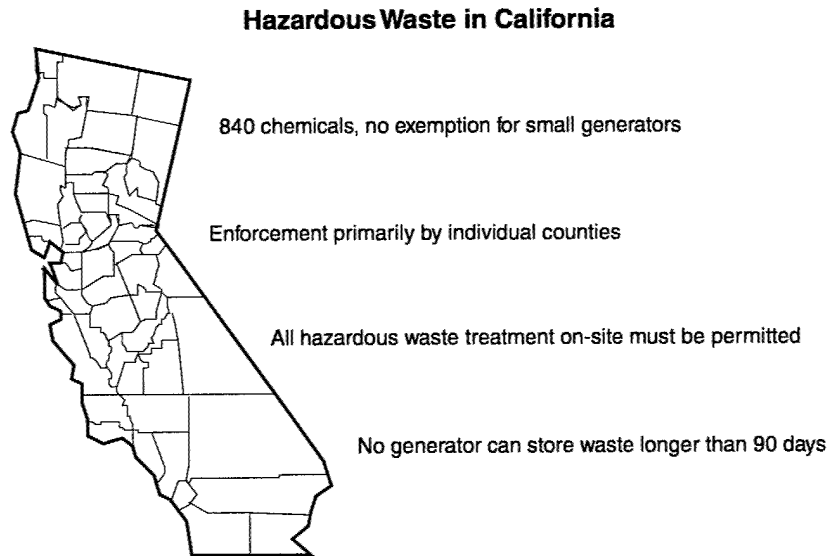


Figure 29

Figure 29 highlights the management difficulties posed by the geographical separation highlighted in Figure 28 using the example of California hazardous waste issues.²⁸

Enforcement of hazardous waste law in California rests primarily with local agencies. California issues Memorandums of Understanding (MoUs) to individual counties (and sometimes cities) to act as enforcing agencies. The enforcement culture depends upon the manpower resources, the motivation of the local district attorney, and the financial incentives. Portions of permit fees and regulatory fines may be retained by the county to assist in running their agencies.

²⁸The California regulatory structure is often claimed to be the nation's most complicated, although there is significant diversity in laws and standards across the nation. This diversity is systematically documented in S. Schwartz, *Hazardous Waste from Small Quantity Generators*, Island Press, Washington, D.C., 1990, pp. 34-39, 66-69.

This degree of local decisionmaking has significant implications for the Army. It is difficult if not impossible for major commands to grasp the urgency and complexity of compliance problems without a strong and experienced California presence. Presence is particularly critical when violations are treated as "must funds" and local regulatory officials and agencies have a financial incentive to seek violations of environmental law. Some have suggested that the new Federal Facilities Compliance Act will create incentives for local officials to fine federal facilities that are perceived as "deep pockets."

Other California environmental areas besides hazardous waste possess considerable complexity and enforcement diversity. At Riverbank Army Ammunition Plant, the environmental coordinator must interact regularly with 26 different state, federal, and local environmental agencies. Because of the unique character of each facility and the different local regulators' styles and motivations, major commands can be overwhelmed during long-distance attempts to supervise installation compliance or planning.

RANDMR453-30

Geographical Distribution of Forces Command Installations**Figure 30**

Fort McPherson, Georgia, the site of Forces Command Headquarters, shares none of Fort Irwin's environmental regulators. Figure 30 shows the management span of Forces Command, with each major installation under a highly differentiated environmental regulatory structure.

Figure 30 and the preceding figures have implications for the Department of Defense's management strategy. The complex heterogeneous regulatory structure facing many DoD installations inhibits effective priority setting and resource allocation without a radically different middle management structure. Priority setting within the existing command structure is inherently difficult to achieve, and makes little sense for bases located in different states and under different regulatory regimes. This appears to be a central limitation of the Stage 2 system. Experience and familiarity with state and regional programs and regulators are essential for cost-effective operation.

RANDMR453-31

Need for Internal Environmental Capabilities

- Environmental office is the primary political representative of the Army
- Environmental offices never reached critical size
- Outside requirements make unusual demands on contracting
- "Permanent liability" of environmental laws
- True multidisciplinary approach is many years away

Figure 31

Examples and studies suggest that it is often desirable for the federal government to contract for outside services when possible. This philosophy has been imbedded in much of the Stage 2 system. However, Figure 31 highlights several issues that make environmental protection distinct from other services and point toward the need to build capability within the Army.

- The environmental office provides the link between the institutional cultures described in Figure 11. This office negotiates and represents the Army to important political constituencies. Stage 2 funding procedures give the environmental office—in effect—the authority to make funding decisions for the Army. Because the office has the responsibility of striking the appropriate balance between the different drummers, it must have a sound understanding and appreciation of the Army's military mission.
- Environmental offices have not achieved the appropriate size. The environmental budget has grown rapidly during the last few years, but this growth was concurrent with an overall downsizing of the Army.²⁹ Environmental offices were severely understaffed and hiring freezes and general personnel cutbacks prohibited the Army from reaching proper staffing levels. Additionally, because these offices are largely run by civilian employees, they exhibit

²⁹In R-4220-A we discuss environmental personnel in more detail, noting the budgetary relationship between overall Army personnel and the environmental staffs.

turnover due to attractive opportunities for environmental managers in the private sector.

- The timing of local and state regulatory obligations is not always consistent with federal budgeting or contracting procedures. Unless installation contracting offices, or other contracting entities (such as the districts of the Army Corps of Engineers), develop flexibility, additional burdens may fall on in-house staff.
- The unique nature of some environmental laws, where generators of hazardous waste retain permanent liability even after legal disposal by outside contractors, has led many private firms to internalize certain aspects of disposal operations. Private firms often manage their own hazardous waste and may choose to integrate recycling, treatment, and disposal operations within their corporate organizations. The Army faces similar liability risks and must consider the need for a similar approach
- The nature of environmental problems and their relationship to other installation activities points to the need for a greater planning and implementation role by Army personnel. Until all affected soldiers and base personnel are trained, educated, and made aware of their environmental responsibilities and the environmental implications of their activities, there is a large need for specialized environmentalists. These individuals should possess the confidence and authority to cross organizational boundaries without seeking command approval at every point. They must also train and instruct others to propel the Army toward a more multidisciplinary approach. A detailed example of this point will be provided in the following three figures.

RAND MR453-32

**Stage 2 Case Study:
Motor Pool Environmental Management**

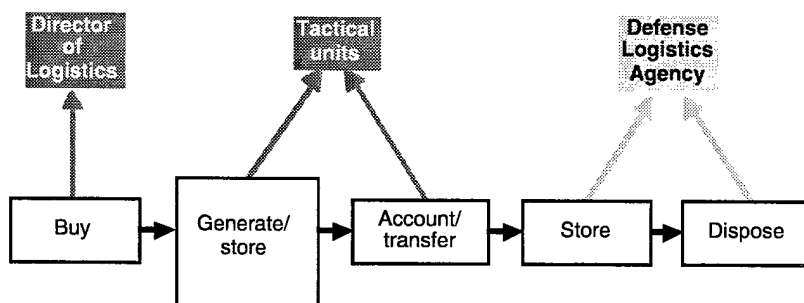


Figure 32

Figures 32 and 33 demonstrate the need for a multidisciplinary approach to environmental management and the limitations of the Stage 2 system in ensuring that such an approach can be permanently and consistently applied. They also illustrate the special attributes of a base environmental office with the confidence and competence to cross installation organizational lines and tackle this multidisciplinary requirement.

Figure 32 depicts the flow of materials through a training base's motor pool and the entity responsible for each management step. The movement of materials (that at some point may be designated as hazardous waste) through an installation is managed by different base functions. Purchasing is normally handled by the Directorate of Logistics, the tactical units use the materials and are responsible for the transfer of waste, and the Defense Logistics Agency, a DoD tenant on the post, is typically responsible for storage and disposal. Theoretically, the post's environmental office need not be involved.

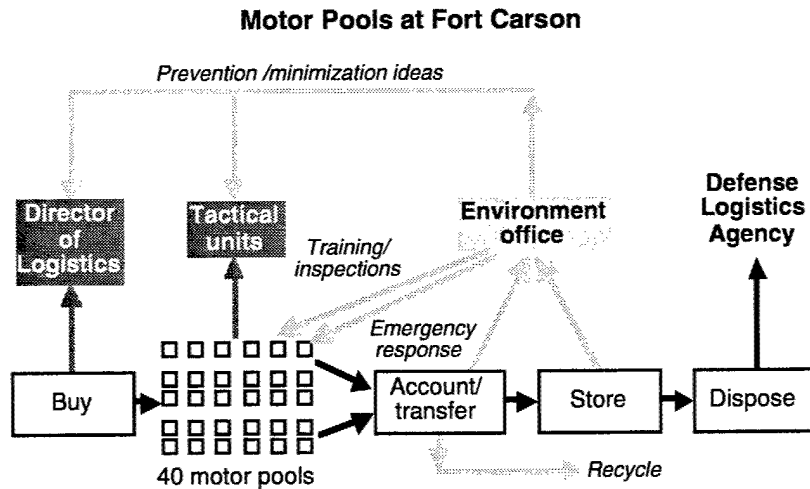


Figure 33

The cultural, structural, and procedural characteristics of the management system can interact to limit coordinated and effective environmental management. Under the current system, environmental offices at Army installations perform several necessary functions requiring their active intervention in a range of installation activities and management jurisdictions.

Figure 33 illustrates how these functions were implemented in Fort Carson's motor pools during the time of our site visit. The approximately 40 motor pools that serve Fort Carson's diverse base and mission operations create a logistic and management challenge that requires active intervention and administrative coordination by the installation's environmental office.

Waste oil is a regulated material under RCRA, and must be recycled or used for energy recovery according to EPA handling requirements.³⁰ Each motor pool at Fort Carson must exhibit careful envi-

³⁰RCRA sets its management requirements according to EPA File Rule EPA/530-F-92-018, August 1992. This management order requires handlers of waste oil to recycle

ronmental stewardship so as not to violate environmental law. A large volume of waste results from this scale of operation, with an estimated 10,000 gallons of waste oil collected and processed monthly.

The environmental office at Fort Carson maintains the complex paperwork required for regulatory purposes. It has also developed a protocol to combine in-house inspections with environmental training. Given the high turnover of military personnel, monthly inspections by environmental office personnel are essential. These official inspections are supplemented by "complementary" inspections for units that were out of compliance during the previous month. During these "complementary" sessions, inspectors cover elements involved in an official inspection while providing informal training and review of previous discussions.³¹ Units generally appreciate this service, since the unit commander must reply by endorsement through the Assistant Division Commander for Support if a unit receives two noncompliance ratings in a quarter. Additionally, each motor pool unit designates an environmental protection officer, who, as official liaison to the environmental office, receives six hours of special training.³² The constant rotation of soldiers and the lack of an Army career specialization in environmental management greatly complicate the training of such soldiers.

The Fort Carson environmental office provides other training for soldiers and officers. Officers are informed of installation environmental issues in a two-hour instruction session during their one-week company commander and first sergeant course. Special training is also provided on combat-related environmental issues, such as soil erosion and training realism. Because 200-300 replacements re-

used oil or make it available for energy recovery. The rule and action are codified in Title 40 of the Code of Federal Regulations (CFR).

³¹Inspectors look for the following: listing, handling, storage, transportation, and disposal of hazardous materials (such as used oil filters); labeling on storage drums; oil spills; training status of individuals; safety conditions; and conservation and recycling issues. Moreover, they spend considerable time explaining the causes of the deficiencies and describing the overall perspective of the waste management system. In spite of this training approach, inspectors are quick to give a noncompliance rating to any unit warranting it during the official monthly inspection.

³²Most units assign this additional duty to the battalion motor officer or battalion supply officer (S4), although a few of the "heavier" units make it a full-time position.

ceive orientation each month, the inclusion of an environmental orientation in this training program is currently under consideration.

The environmental office also carries out tasks that might otherwise be performed by other offices or agencies. Through its inspections, environmental office workers provide emergency response services to tactical units. They make daily waste oil collection runs and operate a temporary storage facility. Normally, the Defense Logistics Agency would be responsible for these functions. Additionally, the environmental office has begun a program to promote on-post waste recycling. An installation environmental office can make important contributions to planning and pollution-prevention activities. At Fort Carson, the office submits waste prevention and minimization ideas to the Director of Logistics (e.g., suggested optimal volume and size specifications for purchasing, storage capabilities, and use and disposal procedures) and to the tactical units (e.g., suggested safe storage bins and collection procedures).

RANDMR453-34

Environmental Activities at Fort Carson's Motor Pools

- Environmental office involved in:
 - Implementation
 - Education/training
- Effectiveness limited by rotation of soldiers
- Former soldiers play key roles in environmental office
- Environmental office is based on fragile personnel status

Figure 34

Fort Carson's successful waste management program results from aggressive efforts to integrate environmental concerns into regular operations. The lessons of this experience are summarized in Figure 34.

One lesson is that the environmental office is involved in a far greater range of activities than oversight and management. The complexity and scale of environmental operations compelled the environmental office to become involved in implementation. There is continuous training and instructing of soldiers and officers in environmental management concerns and procedures. This training is made more difficult by the constant rotation of soldiers and the lack of a military designation for expertise in hazardous wastes and materials. This results in ongoing retraining of soldiers who may not benefit from such skills in the future. We note that former soldiers with an understanding of the Army's military mission have played a particularly important role in the environmental directorate, although only on a temporary basis.

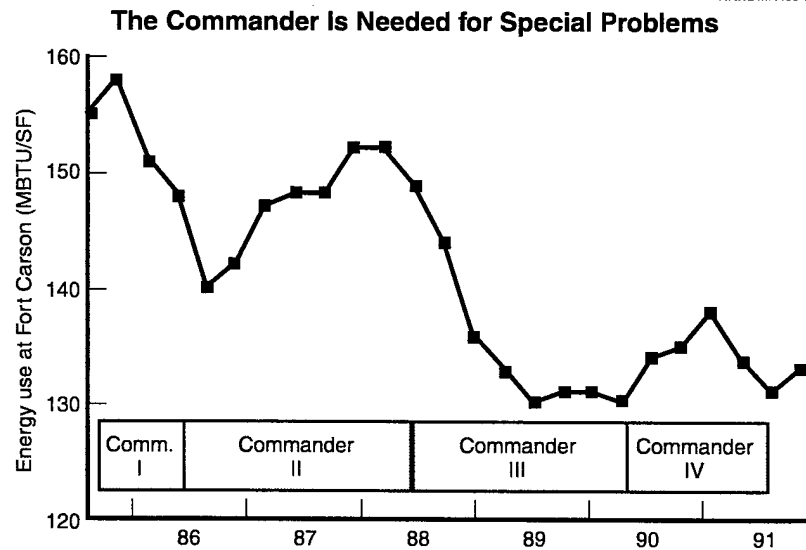
These points illustrate some broader issues. Because environmental issues may arise as unanticipated by-products of regular installation activities, many environmental operations are imbedded in operating procedures of particular base functions. Clearly, training for soldiers and civilians to mitigate environmental impacts is essential. But appropriate training requires analysis of alternatives and modification of practices, many of which may be specified in decades-old

maintenance manuals. In such instances, base staff may need to improvise to determine alternative approaches. Career environmental staff are extremely valuable in this regard. Furthermore, the role of former soldiers in environmental protection cannot be adequately emphasized, either at the field or administrative levels. As suggested in *Two Shades of Green* (R-4220-A), former officers with experience in environmental affairs would have been invaluable at Fort Bragg. At Fort Carson, former soldiers now play useful and effective roles as training liaison and inspectors.

The Fort Carson's motor pool case study indicates that until a multidisciplinary culture emerges in all garrison directorates, it will be necessary for environmental offices to cross post organizational lines and engage in activities necessary for environmental compliance. Similarly, the example of Fort Carson's motor pools reaffirms our earlier findings concerning the need for specialized training and a career track for a subset of soldiers.

Other positive examples in addition to the Fort Carson motor pools exist in the Army, but they are limited by the fragility and size of their environmental staffs. The Fort Carson example reveals a structure that could evolve toward a Stage 3 system; in the near term, cohesive environmental staffs will be needed to achieve a multidisciplinary capability. In the long run, environmental training and education for soldiers and Army civilians may reduce dependence on distinct environmental staffs.

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NOTE: Data supplied by Fort Carson energy coordinator.

Figure 35

Finally, we note that the Stage 2 system is influenced by the attitude and behavior of the commander. Since environmental affairs often cross post organizational lines, the office of the garrison or installation commander may be the place where responses to major environmental problems are organized and addressed.

This is illustrated in Figure 35 by a chart of energy use patterns at Fort Carson. The Fort Carson energy office has analyzed these data and determined they cannot be explained by changes in weather patterns, installation activity level, or other factors that might influence energy use. The two periods of decreased energy use were (in the judgment of the energy office) motivated by the commander's active interest in energy conservation as demonstrated by personal command inspections, regular meetings of base energy conservation advisory boards, and the symbolic act of a commander using a bicycle for personal transportation. Energy conservation achievements

were reversed when commanders had less interest in energy conservation.

Other examples exist of positive steps taken by Army commanders to motivate compliance and preventive action across an installation. Conversely, local autonomy, coupled with the frequent rotation of garrison commanders, hindered the development of an efficient program in Stage 1. There is still no system to ensure consistent levels of command interest and priority. The cultural and structural incentives clearly reflect the military mission's overriding importance in career development and evaluation of commander performance.

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Unique Requirements and Stage 2

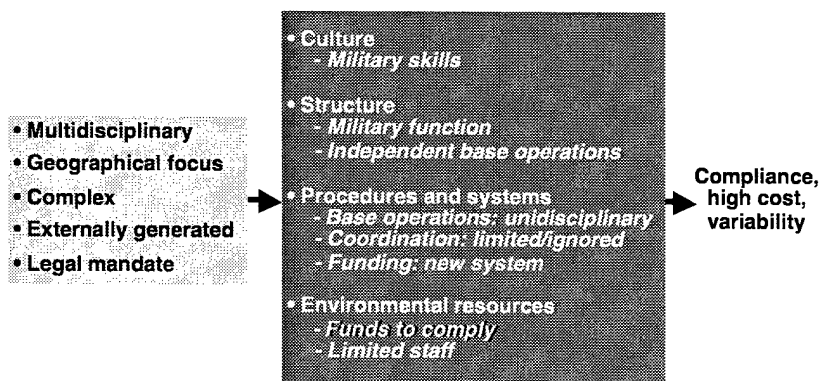


Figure 36

Figure 36 outlines how the requirements for environmental management affect the Stage 2 system. Stage 2 was an urgent solution to a serious and growing problem. The major changes involved procedures to ensure that headquarters funding priorities would be reflected in installation practice. The result was a dramatic increase of funds for environmental protection. However, Stage 2 did not represent a comprehensive response to the requirements for efficient environmental management. Because resource allocations are triggered by violations or anticipated violations of law, remaining elements of Stage 2 continue to be reactive. In Stage 2 the Army's program is directed away from potentially cost-effective prevention and conservation activities. It relies on the abilities of individual environmental coordinators to negotiate within and outside the Army. Army cultural change is reflected by a widespread desire to comply and a fear of noncompliance. But there are few incentives to manage for efficiency.

The primary limitation of Stage 2 is the weak link between headquarters and the field. Environmental demands and priorities come from below, resources from above, and both respond to different external political conditions. Given the variability and specificity of local requirements, and the extent to which environmental requirements

are imbedded in other mission and support activities, it seems clear that a higher degree of local priority setting and local responsibility for resource allocation will be required to gain increased efficiency. However, these are precisely the factors that led to serious deficiencies in Stage 1. *Ironically, the Army's challenge is to recapture certain elements of the Stage 1 system while guaranteeing that its failures are not repeated.* To do this, the Army will need to develop a new tradition of coordination up, down, and across (geographically) the chain of command and even across other DoD services.

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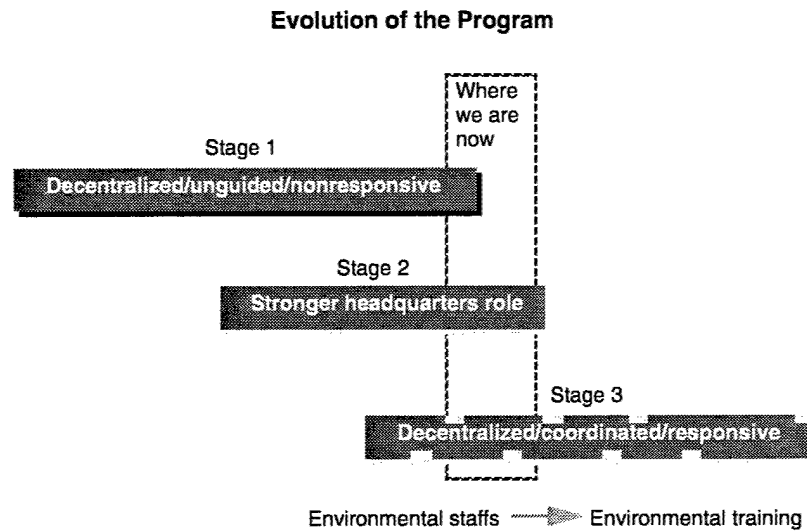
Outline

- Background and environmental policy challenges
- Unique challenges posed by different drummers
- Response to the different drummers
 - Stage 1
 - Stage 2
 - Limitations of Stage 2
 - – Options for achieving Stage 3

Figure 37

The next section of the briefing describes policy options for developing a Stage 3 system.

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**Figure 38**

Earlier in this report we portrayed three stages of evolution in the Army's environmental protection program. Figure 38 repeats this figure and argues that the Army's current program is mainly in Stage 2, with individual bases reflecting Stage 1 and 3 characteristics. The Fort Carson motor pool system is an example of a Stage 3 system, although it depends on environmental staff who cross organizational lines rather than environmentally trained professionals. Fort Sill has saved the Army significant funds by conducting clean-ups, storage tank removal, and range land restoration with in-house staff. Additionally, the Army Environmental Policy Institute has documented a number of "Good News" stories that identify promising instances of innovation.³³ However, many of these activities are performed by fragile staffs and are the achievements of dedicated individuals rather than of a comprehensive Stage 3 system. Similar examples could have been found during Stage 1.

³³See R. Stine and K. Cockerill, *U.S. Army Environmental Management Good News Stories*, Army Environmental Policy Institute, AEPI-PS-292, Champaign, Illinois, June 1992.

The Army is grappling with the broader set of tools, policies, and systematic changes that would represent a more comprehensive response to the requirements highlighted in Figure 36. Although many of these programs were initiated by headquarters environmental personnel, they are finding an increasingly receptive audience throughout the Army. Initial steps that may add momentum toward achieving a Stage 3 system include

- The consolidation of unidisciplinary base operations functions at headquarters into a multidisciplinary Assistant Chief of Staff for Installations. This could eventually lead to a more multidisciplinary approach to procedures and ultimately a more multidisciplinary culture for installation base operations.
- The development of an environmental training program in Army schools and training for personnel not directly involved in the environmental office.³⁴ This could eventually promote a more multidisciplinary culture far less dependent on environmental staffs to cross organizational lines.
- Increased environmental training for garrison commanders and new procedures for selecting garrison commanders. In the past, little consideration to skill criteria was given for this complex and critical position. It was generally a last assignment before retirement. A more deliberative process is being developed that may greatly enhance the prestige and Army career potential for prospective garrison commanders. But the pool consists of officers who have spent most of their career preparing for the military mission rather than for a position in city management. The two-year rotation cycle may also need to be extended.
- Increased recognition of the need for a geographical-based response, as evidenced by increasing discussion (within the Army and DoD) about developing regional capabilities and offices. In our judgment, such a response is likely to be necessary, although a convincing role for such offices remains to be demonstrated, particularly given the perception of insufficient environmental personnel at installations. There is a fear that personnel at re-

³⁴For a description of this program, see D. Brown and C. Werle, "Reducing Liabilities by Training 'Nonenvironmental' Decision Makers," *Federal Facilities Environmental Journal*, Vol. 4, No. 4, Winter 1993-94.

gional offices would be drawn from installation personnel,³⁵ and would weaken already fragile staffs.

At the installation level commanders often add funds to environmental accounts, above and beyond funds being allocated through the compliance priority system.³⁶ Thus, it appears that funds are now being diverted from other installation needs to resolve environmental concerns. This is undoubtedly motivated by the fears of criminal liability, but it also implies that the "must-fund" policy is no longer the linchpin of the program.

This latter point is critical, because it illustrates that the current relationship between headquarters and the field may be changing. "Must funds" were a critical policy for ending Stage 1 but not necessarily for building a Stage 3 system. When environmental affairs rely on a "contract-out" approach, there is a strong incentive for field operations to utilize the system to maximize resource flow with less regard for overall Army priorities.

To obtain a Stage 3 system, the Army must take up the issue of a system that properly copes with the "different drummers." It must find a way to imbue a sense of the Army mission into those managing and implementing local environmental activities. Once this is achieved, the Army should empower local environmental offices to make decisions that simultaneously balance the interests of local communities and the Army. As noted earlier, one apparent need is for middle management to perform a bridging function between headquarters and the field.

³⁵ *Defense Clean-up* reported in its February 11, 1994, issue that the service chiefs rejected a proposal by the Deputy Undersecretary for Environmental Security to establish regional DoD environmental offices. Instead, the Army, Navy, and Air Force are reported to prefer communications to be routed through service headquarters environmental offices (Vol. 5, No. 6).

³⁶ Army Audit Agency.

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The Quality Movement and Stage 3

Deming TQM Paradigm

- Mainly useful at installation level
- Requires adaptation

Baldrige Core Values Approach

- Key concepts
 - Continuous improvement
 - Long-range outlook
 - Management by fact
- Promising for facilitating transition
- Not yet programmatic
- How to measure progress?

Figure 39

The “quality movement” has had a major impact on Japanese and U.S. business and service organizations during the past two decades and has recently been applied to all levels of government operations. Figure 39 outlines the issues associated with application to government and points out that the classic Deming paradigm for Total Quality Management (TQM) seems best suited to an organization that has an identifiable customer/client/stakeholder base and that produces many identical (or nearly identical) goods and services. Swiss³⁷ proposes that application to government requires that “orthodox” TQM be modified to stress feedback from clients, customers, and stakeholders; performance monitoring; continuous improvement; and worker participation. Such concepts have an important role in organizing and managing environmental activities at individual installations, but require careful adaptation by experienced practitioners to achieve optimal results.

³⁷J. E. Swiss, “Adapting Total Quality Management (TQM) to Government,” *Public Administration Review*, Vol. 52, No. 4, July/August 1992, pp. 356–362.

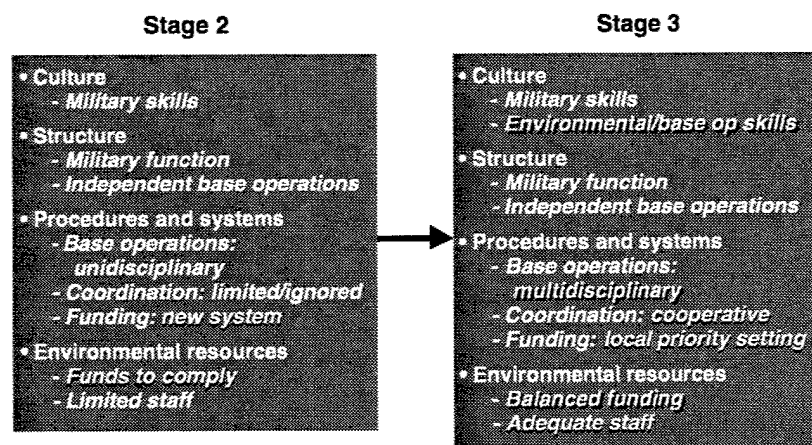
A more fundamental question, still unanswered, is whether and how the transformation to a "quality" organization can facilitate movement beyond Stage 2 for the Army's entire environmental organization. The Baldrige³⁸ core values rather than the Deming paradigm, even in modified form, are the proper place to start. Among the Baldrige core values are several that seem ideally suited to achieving Stage 3 status. Leadership, employee participation, and corporate responsibility and citizenship are areas in which the Army needs no additional motivation. But other values such as continuous improvement (involving cycles of planning, execution, and evaluation; information drawn from all sources; and a quantitative basis for assessing progress), long-range outlook (including sensitivity to shifting regulatory priorities), and management by fact (particularly the use of data analysis to create performance measures and indicators for tracking operational progress) seem most relevant.

In the beginning, measures of process are likely to be useful as performance indicators—for example, number of underground storage tanks removed, number of gallons of paint stored, number of oil spills, quantity of asbestos removed, number of troop training sessions, and the like. Each installation, or installation type, would develop its own set of measures, and serial observations could be used to provide a way to profile and track activities over time. But the fundamental question of formulating environmental measures of progress that can be used in continuous monitoring and evaluation is still not yet answered. The risk of overquantification of process is that it may mask problems (or even successes) that can be understood only by careful and deep information gathering. That information may be contextual and subjective rather than explicitly quantitative. On balance, it seems clear that the "quality movement" could provide a philosophical approach guiding the transition to Stage 3, but it needs a great deal of work—both by analysts and practitioners.

The next few figures present options to speed the transition to a Stage 3 system while avoiding the pitfalls of Stage 1. By more fully developing these options, the Army can refine long-term goals for its

³⁸Described in the Malcolm Baldrige National Quality Award Brochure, American Society for Quality Control, P.O. Box 3005, Milwaukee, Wisconsin, 1994.

program, chart its current progress, and examine the relationship between a Stage 3 system and military training and readiness.

Policy Option 1: Mixing the Shades of Green**Figure 40**

A focus on further changes in the Army's culture is one aspect of developing a Stage 3 system (we note that there already have been significant changes in consciousness at all levels of the Army). This option might also be called "mixing the shades of green" because it entails going beyond consciousness-raising and increasing environmental and base operations responsibilities and skills in the green-suit Army. It recognizes the importance of the "different drummers" by increasing the participation of the uniformed Army in meeting state and local requirements and responding to local and regional officials. This elevates the priority of base operations for the soldier and entails a fundamental change in the combat mission-oriented culture.

In some ways, the Army is beginning to implement elements of this approach, perhaps without explicit analysis or forethought. Additional environmental training and prestige for garrison commanders is one example. Another is the recent decision to place NPL cleanups within the responsibility of the major commands rather than the Army Corps of Engineers. This gives additional environmental re-

sponsibilities to entities organized primarily for the military mission.³⁹

To fully implement a shift towards the "mixing" option, several key changes would have to be made:

- Continuation and expansion of ongoing education and training to develop multidisciplinary awareness.
- Significant increase in prestige and training of Army officers responsible for operating bases. A career path leading to positions such as garrison commander or heads of key directorates such as Engineering and Housing might be required. Longer rotations for key military personnel such as garrison commanders, the DEH, and possibly the installation commander would facilitate mastery of local environmental and political concerns.
- Evaluation of installation commanders would be on a combination of military and base operations skills to allow the local commander to be responsive to both political cultures. He or she would have a strong incentive to meet local environmental requirements, but in a manner that minimizes overall installation costs.

In this option, the existing major command structure, according to military function, would be preserved. Local decisionmaking and flexibility would promote efficiency because the commander would be evaluated on managing both the base and the military mission. While the basic structure need not be altered, the perception of the Army's mission at all levels would be broadened.

The advantage of this approach is clear. It can be implemented gradually with minimum disruption of the Army. The disadvantage—the diversion of soldiers from military training—might not be tolerable to the Army, given the current military emphasis on core missions. In addition, this solution fails to address other major problems. It does not build a more effective middle management structure, nor does it improve geographical coordination across the chain of command.

³⁹ *Defense Clean-up*, May 7, 1993.

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graph TD
    DoA[Department of the Army] --> Mission[Mission]
    DoA --> BaseOps[Base operations]
    DoA --> ETC[Environmental technical center]
    Mission --> Bases[Bases]
    BaseOps --> Bases
    ETC --> Bases
    RegionalCmd[Regional command] --> Bases
    Bases --> Tenants[Tenants]
  
```

The diagram is an organizational chart for the Department of the Army. At the top is the 'Department of the Army'. Below it, three main branches are shown: 'Mission', 'Base operations', and 'Environmental technical center'. The 'Mission' branch leads to 'Bases', which then leads to 'Tenants'. The 'Base operations' branch also leads to 'Bases'. The 'Environmental technical center' branch leads to 'Bases'. A 'Regional command' box is shown to the left of the 'Bases' box, with an arrow pointing towards it. The 'Bases' box has an arrow pointing to the 'Tenants' box.

In an alternative approach, the Army could seek to change the institutional structure or "separate the shades of green" in a move toward two separate chains of command and two separate cultures. A direct chain of command could be established for base operations, which might be conducted entirely by civilians. There would be a single Army environmental technical center, and military units would act as tenants on the base. Middle management might be organized regionally to ensure greater knowledge of local environmental problems and build a closer match between the "different drummers."

This option might be consistent with a DoD structure for base operations. Since the military mission would be largely separated from support operations, the need for distinct management approaches for the Air Force, Navy, Army, and Marine Corps might disappear. The inclusion of additional facilities within a single regional grouping would allow for a narrower geographical focus for regional commands. This is particularly important because it is the 50 states, rather than the 10 EPA regions, that present the most difficult man-

agement challenge. The ability to include more bases and to organize into smaller geographical regions would facilitate the development of a middle management structure responsive to state concerns.

Potential Decisive Issues

	Mixing	Separating
Conservation/combat		?
Tradition of unitary command		?
Evolution to DoD structure	?	
Coordination/effective management	?	
Diverting the soldier	?	
Base closures issues	?	
Realignment		?

Figure 42

Figure 42 summarizes the key issues affecting the viability of the first two options. The question marks indicate problems for each option.

As discussed earlier, the natural resources or conservation issues that directly affect combat training can be most efficiently managed by developing multidisciplinary teams of individuals expert in military training, base operations, and ecology. Achieving this degree of coordination is clearly facilitated by a strategy in which the soldier's base operations skill is highly valued. The commander's simultaneous authority over military training and base operations is an essential tool for minimizing both environmental damage and restrictions on military training. As we noted in the Fort Bragg case study, this advantage was not always wisely used in the Stage 1 system. Nonetheless, it can be a decisive advantage.

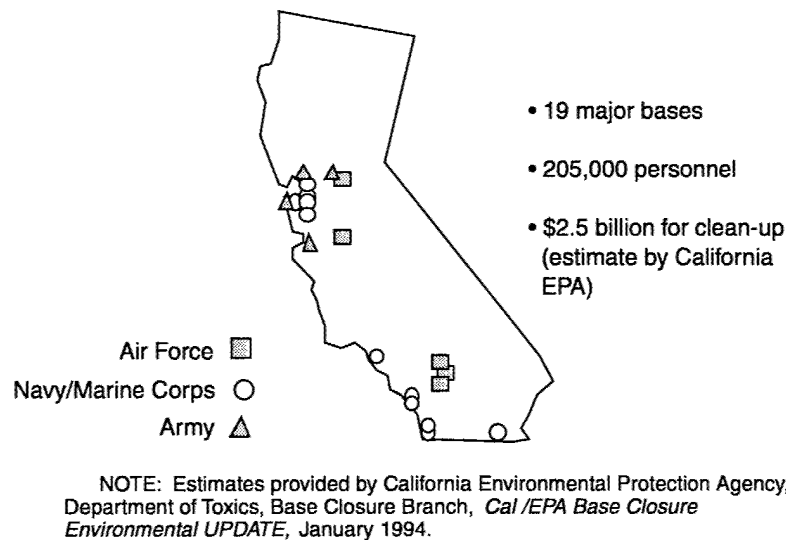
"Separating the shades of green" might lead the Army away from this multidisciplinary goal. A special system and procedures would be required to cope with conservation and other environmental issues

that intersect with combat training. In addition, separation would conflict with the tradition of unitary command. A post might have a civilian garrison commander who could operate independently of the military commander. The military commander might be indifferent to environmental issues because they are outside his authority and responsibility and no longer act as an environmental stakeholder. Separating the lines of authority continues and further amplifies the isolation and autonomy of the military activities. Finally, separating the shades of green may not enhance the multidisciplinary thinking (about missions and base operations) needed to make realignment decisions.

"Mixing the shades of green" raises a number of questions. It does not seem to promote evolution toward a DoD structure that might allow for greater economies of scope in a particular region. Perhaps more significantly, it assumes a wide range of acceptance of, and training for, Stage 3 objectives by the military command. Additionally, mixing has the disadvantage of diverting the soldier from the combat training mission.

An even more significant diversion of the soldier could arise from Army environmental responsibilities that do not intersect with base operations, such as waste site remediation and base closure activities. These activities are more logically managed by a professional base operations command that is evaluated on its clean-up performance. There seems to be no compelling reason to involve the soldier in these activities. An illustration is the Air Force Base Disposal Agency that reports directly to headquarters. More logically, such a system would be organized at the DoD level.

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Base Closure in California: A State and Forces Command Issue**Figure 43**

Issues related to base closure have become an enormous part of DoD's environmental responsibilities and represent an example almost completely distinct from the "different drummers" priorities. A post-closure base with no military mission has little direct impact on national military strategy. However, the clean-up plans, community reuse plans, and the opportunities to use clean-up funds to offset job losses are among the most critical DoD environmental issues for communities and states.

As shown in Figure 43, nowhere is this issue more intense than in California. There, 19 major bases and several smaller bases are closing. Direct and indirect jobs lost due to closures could rise to 205,000. Clean-up costs, for all services, are currently estimated at \$2.5 billion. Base closure in California is a major, if not decisive, economic and political issue that has motivated the President to offer a five-point plan for clean-up, closure, and rapid property trans-

fer.⁴⁰ However, once the active forces have left, closure has relatively little impact on the Army's military mission.

Although it is still early in the closure process, the Stage 2 system does not seem to promote a responsiveness consistent with this issue's political priority.⁴¹ Forces Command is responsible for implementing the complicated environmental tasks associated with clean-up, closure, and transfer of Fort Ord.⁴² Since the active units have left, Fort Ord plays virtually no role in Forces Command's military mission. However, Fort Ord is one of 19 major DoD installations closing in a state where rapid property transfer is an urgent priority. California and the EPA are able to take a "systems perspective" on the complicated regulatory problem; however, DoD's military command structure does not lend itself to a similarly focused effort. The Army Materiel Command and Forces Command maintain separate efforts to close individual facilities, while the Air Force and the Navy employ entirely different management structures.

We do not yet know if these organizational issues are likely to inhibit the complicated process of closing bases. One possibility is a structure for base closures that would allow the DoD to match the geographic span of state and local governments. One might also question the need to integrate closure activities into the environmental programs of the individual services. Realignment—and the design of the future basing structure for active units—requires joint planning of mission and installation personnel. But base closure, after military units leave, has little connection to the ongoing military mission.

⁴⁰President Clinton's speech of July 2, 1993, outlines the five points as (1) provide grants to communities affected by base closing, (2) establish a single federal coordinator at each base, (3) establish a fast-track clean-up program for environmental problems, (4) establish fast-track disposal of federal property, emphasizing uses likely to create new jobs, and (5) make a coordinated effort to pool federal resources for easier community access.

⁴¹We say this in the context of the incentives facing the services. DoD personnel actively follow closure in California and have defined numerous innovations as noted by the five-point plan.

⁴²Although there are plans to transfer Fort Ord to the Training and Doctrine Command (TRADOC) this summer.

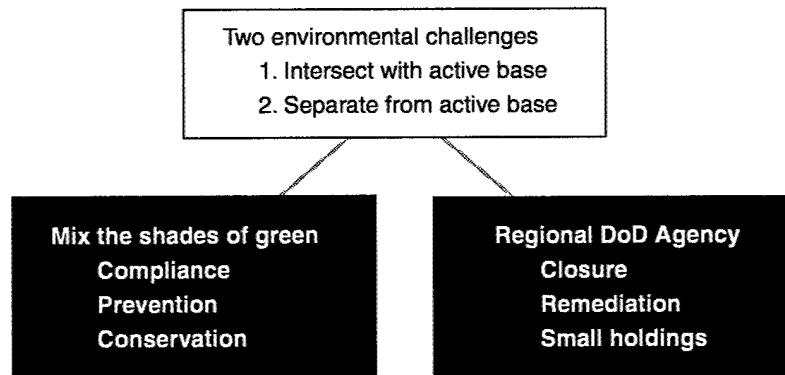
A Hybrid Option to Reach Stage 3

Figure 44

The preceding discussion suggests another option for reaching a Stage 3 system. The essence of this option, shown in Figure 44, is the recognition that the Army and DoD face two types of environmental challenges—those that intersect with ongoing base activities and those that do not.

The first challenge—environmental activities intertwined with normal base activity—involves prevention, compliance, and conservation. These activities could be managed by the existing structure with heightened training and attention by the military command.

The second challenge—environmental problems that do not influence core activities—may respond to a new and separate organization structure. For this we envision a regionally based, civilian DoD agency established to address base closure issues including environmental problems attached to the closing base. This would relieve the command of responsibility for base closure and possibly remediation. Additionally, this DoD agency could have responsibility for all DoD real estate in a region affected by base closure. One current example is at Fort Ord, where National Guard facilities, Army reserve facilities, the hospital, and some subinstallations may remain open

even after the fort is closed. Under the hybrid scheme, management of this real estate would be conducted by a DoD regional center.

This option might benefit active bases with hazardous waste remediation activities if those activities could be logically separated from the operations of the active base. New hazardous waste legislation written specifically for the base closure process will allow for the identification and transfer of clean parcels on closing NPL military bases.⁴³ Conversely, the Army and DoD might seek to identify "dirty" parcels on active installations and to transfer these parcels to the new remediation and closure agency. This would allow the installation and major commands to be freed from clean-up obligations, assuming that the clean-up activities could be separated from active military base activities. The ability to make this separation would need to be determined on a case-by-case basis.

The hybrid option would not eliminate the dilemma of the "different drummers," but it would reduce some complexity. The Army (but not the federal government) could disengage from a significant portion of its highly technical and specialized environmental problems but would still need to "mix the shades of green" for those issues interacting with current activities. Synergies for base closure and remediation could then be organized at the DoD level.

Under the hybrid option, the regional centers could gain a perspective across a region and play an active role in implementation by managing closure and small property holdings. This could place regional centers on an equal footing with major installations operating in the same region or state. Such regional entities may eventually evolve toward a more prominent role in supporting active installation conservation, compliance, and prevention activities. If successful, such a move could overcome some of the obstacles that have plagued regionalization proposals to date.

⁴³In 1992, Congress passed the Community Environmental Response Facilitation Act (CERFA), aimed at transferring clean parcels on closing bases.

CONCLUSIONS

The Army has made significant progress toward the goal of correcting past practices and developing an effective environmental program. The data-gathering, auditing, and centralized monitoring that are now conducted by the Army are typical of techniques used by large, multistate private industrial concerns that share the challenge of managing large potential environmental liabilities. The Army is moving toward integration of environmental concerns into a broad segment of the green-suit army and sustaining base.

We have argued that it will be extremely difficult to measure improvements in efficiency and effectiveness. Until a set of performance measures is formulated, the Army should track the evolution of its environmental programs' response to the unique requirements highlighted in Figure 15. These requirements support the notion of effective coordination up, down, and across the chains of command, to respond effectively to the various institutional and political imperatives acting on different segments of the Army. The Army must perform its core mission, respond to the diverse and even conflicting concerns of the states and localities where it trains for that mission, and inform a Congress that seeks coherent explanations of issues that are inherently fragmented.

Given the local nature of environmental problems, it appears that the Army must take on the challenge of returning priority-setting and responsibility to individual bases while ensuring that the past problems that arose from local control over priority setting are not repeated. *This may require more fundamental changes in Army structure, culture, or both.* As noted in the text, there are advantages and

disadvantages with either approach as well as with a possible hybrid approach. On the current trajectory, the Army is taking steps toward a cultural change by demanding that its commanders take a greater responsibility for base operations. This option has the advantage of being evolutionary, but it does not promise to build synergies across installations or solve the lack of an effective middle management. It may also divert the soldier from the military mission to a greater extent than is desirable.

Obviously, such changes will require lengthy debate and further analysis. As pointed out in the text, the multidisciplinary approach to base operations, independent of whether we emphasize structural or cultural change, will require an extensive period of time to develop. *Until a true multidisciplinary approach is achieved, environmental personnel at all levels of the Army, but particularly at installations, will need the authority and confidence to cross organizational lines to solve problems where they arise. The vision of the environmental office as purely a management office, with little need to engage in implementation, is many years away.* Base environmental staffs will continue to be involved in activities that exceed their status on a formal organization chart. They will often need the direct support of commanders to do this.

Although the Army must face a fundamental decision about how to operate its bases and achieve Stage 3 status for its environmental organization, there are a number of near-term steps that will assist almost any option and will better prepare the Army for making—and adapting to—the strategic choices:

- Environmental staffing needs at all installations should be analyzed and actions taken to promote coherent, stable, and balanced environmental staffs. Environmental exceptions to the overall downsizing of civilian base operations staffs should also be considered.
- Criteria should be developed for evaluating the performance of commanders in their base operations role. Such criteria will be useful even if there is a long-run decision to create a professional base management command.
- The Army should closely monitor and evaluate techniques for managing military bases that are now employed on an ad hoc

basis. The significant variation in base operations could be exploited to calibrate techniques that work and those that do not.

- Environmental training programs should be given high priority despite declining budgets. These programs are valuable for both civilians and soldiers and are an essential element in reaching the next level in environmental management. They offer the potential for long-run cost-effectiveness.
- The Army needs to recognize that environmental coordinators require the skills and orientation of both a military officer and a civilian professional. The coordinator represents the Army to important political constituencies and is responsible for balancing the Army's response to the "different drummers." The position could be filled by a senior military officer with the training, orientation, and occupational specialty to ensure familiarity with environmental regulations and sensitivity to community interests. Coordinator job performance would benefit from a longer stay at a base than the customary short rotation schedule. Conversely, the office could continue to be led by a civilian, whose performance would benefit from further training about the Army's military mission and core culture. Training and sharing common values might be enhanced by tours of duty at headquarters, major commands, and other installations before assuming the coordinator post. In this manner, the coordinator could better understand the nature of the "different drummers." A similar approach might also apply to the head of compliance and natural resources at an installation.
- The Army should attempt to resolve the middle management issue for base operations. Is there a preferred configuration for a "bridging" function between installations and headquarters to link the differing perspectives?
- The role of modern quality management and improvement concepts, exemplified by the Baldrige Core Values, in facilitating Stage 3 status should be carefully investigated in terms of the concepts' influence on coordination and control.
- A pilot regional office with a dual coordinating and implementation role should be established. The management of small DoD property holdings and Base Realignment and Closure (BRAC) bases are possible activities for this office.

- The Army—in conjunction with DoD—should begin to evaluate more fundamental trade-offs for operating its bases. Other alternatives (in addition to the three options identified here) should be explored. The Army should examine how the structure of environmental regulation influences its military mission and consider creative new approaches that might lead to better environmental performance at lower costs.
- The Army (and DoD) should consider the feasibility of parcelizing active installations in order to avoid the problems that arise from the Environmental Protection Agency (EPA) policy of classifying entire installations as NPL sites. Among other advantages, this would facilitate the possible shifting of cleanup activities to a new DoD or federal agency.

Our overall findings suggest that the Army has made considerable progress in environmental protection and conservation since the decentralized Stage 1 system—characterized by local autonomy, high risk of neglect, and headquarters' indifference—was supplanted by the more responsive Stage 2 approach. But a well-designed and properly staffed system would respond to the “different drummers” with greater effectiveness and efficiency. Changes in culture, communication, coordination, control, and incentives are essential to fulfill the promise of Stage 3.